Page 6 Publishing's NEW

ATARI USER

The Resource for the ATARI CLASSIC and the ATARI ST

Issue 71 - April/May 1995 £2.50

FOR THE ATARI CLASSIC

- ***INTERRUPT!*** *Display List Interrupts and Vertical Blank Interrupts - the full exposé!*
- ***DEMOS*** *A run-down of some fabulous demos for the Classic*
- ***PLASMA*** *Swirling clouds of gas attack your Atari!*

FOR THE ATARI ST



MAKING MUSIC

We explain how MIDI makes it possible to transfer music between machines

PUBLIC DOMAIN *a first look at some of the Budgie range*

PLUS .... THE TIPSTER COMPLETES THE BRUNDLES ... MURPHY ON YOUR ATARI ... MAMMOTH MAILBAG

This issue's ....

Thanks

Les Ellingham puts it all together and fills up the gaps but the real thanks goes to the following who made this issue possible

Sandy Ellingham who takes care of all the office work, advertising and mail order

For their regular contributions

John S Davison	Stuart Murray
Paul Rixon	Nic Bavington
Ian Finlayson	Mark Stinson
Allan J. Palmer	The Tipster

For their contributions this issue

Daniel Baverstock	Ann O'Driscoll
Joel Goodwin	Bodo Jurss
Steve Nicklin	Richard Gore
James Austin	John Foskett
Leslie Benson	Andy Guillaume
Kevin Cooke	

Special mentions to John Foskett and David Sargeant who sent in several contributions that will be featured in the next few issues - thanks guys!

Some of these folk have supported us from almost the beginning and without them we would not be here. Some are having articles published for the first time. All are to be thanked for sharing their enthusiasm with all who read New Atari User

HOW IT'S DONE

PAGE 6 shows just what you can do with your Atari. NEW ATARI USER has always been created entirely with Atari equipment, initially on the XL but more lately with a Mega ST and other stuff, who needs PC's or Macs! Hardware includes a Mega ST2 (upgraded to 4Mb), SM125 Monitor, Supra 30Mb Hard Disk, a HP Laserjet III, Citizen 124D printer, Philips CM8833 monitor, 130XE, a couple of 1050 disk drives, 850 interface, NEC 8023 printer. Principal software used is Protext and Fleet Street Publisher 3.0. Other software includes Kermit, TariTalk, Turbo Basic and various custom written programs on the XL/XE. Articles submitted on XL/XE disks are transferred across to the ST via TARITALK. Programs are coded on the XE and printed out directly for pasting in after the typesetting is completed. All major editing is done with Protext and pages are laid out with Fleet Street Publisher. Each page is output directly from Fleet Street to a HP Laserjet III which produces finished pages exactly as you see them. All that is left is to drop in the listings and photos.

Well, it's not quite as easy as that but you get the idea!

Inspiration

Well, what inspiration has there been this issue? Strangely not a lot. Much of this issue has been completed in silence as my young son has been quite unwell and I have had one ear open for him as he lies in the other room. The music that has been played has been virtually the same as last issue - Mike Oldfield, Mary Chapin-Carpenter, Runrig but I did have a small wander into some older stuff. It really started with the Woman's Heart CD which inspired me to listen to some of the artists featured thereon. Maura O'Connell was strangely disappointing, I almost wondered why I bought it, but Paul Brady was in fine form, especially with The Island. Breaking away from Ireland I had a listen to Shirley Collins and The Albion Country Band. The album was No Roses and it still sounds great after almost 25 years. Next time maybe I'll have one or two new sounds to report on but for now I have just had a sudden desire to have a listen to Nic Jones' Penguin Eggs. See you next time.

CONTRIBUTIONS

Without contributions from its readers, NEW ATARI USER would not be possible. PAGE 6 welcomes and encourages its readers to submit, articles, programs and reviews for publication. Programs must be submitted on disk or cassette, articles should wherever possible be submitted as text files on disk. We seek to encourage your participation and do not have strict rules for submissions. If something interests you, write a program or article and submit it!

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'The Magazine for the Dedicated Atari User'

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The next issue of NEW ATARI USER is due to be published on 31st May
Editorial copy date is 30th April

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Editorial

THANKS!

Thank you. Thank you. **Thank you!** Last issue's appeal for more contributions brought forth a great response with several top quality articles and one or two readers submitting a whole host of exciting things on the one disk. We have got some good things coming up for you in the next few issues but please don't think that we have everything we need. It takes a wide variety of articles and programs to keep New Atari User interesting and we need your continuing input. We need more programs, especially games which seem to be a bit thin on the ground now, so get programming. If you check out the articles this issue on display list and vertical blank interrupts you should be able to polish up that program that you thought might not be quite good enough and send it in for others to enjoy. Do it now!

THE NEW FORMAT

After the initial letters of praise at the brave decision to go to a smaller format we have had one or two dissenting letters in recent weeks which have complained about the smaller type size used. What smaller type size? As I have said before the type size is exactly the same. That was one of the most important considerations in designing the new layout. The typeface is 8 point Bookman Light on a 10 point base and that is exactly what I have been using for the past five years. If it appears smaller to some folk it must be an optical illusion.

Several readers have said that they miss the printed listings. One of the reasons for dropping them is that the new format makes it quite difficult to get listings in two columns on one page and if only one column is used any listing will take up twice as many pages. This issue I have tried to address the situation with a type-in listing in the magazine which has been printed with a condensed typeface. I hope that it works, and if it does we may be able to have more listings in the future.

AMS

The Spring AMS is upon us again and you will see an advertisement opposite. Although it contains a coupon to clip for reduced admission, ***the organisers have said that they are quite happy to accept photocopies or even for you to take along your mag and show it at the door for the reduced price.*** No need to spoil the magazine.

This time the show has fallen at an awkward time for us as we have another important event on the following two days. We will be at SAMS but not with our usual stand so please don't expect the usual display. If there is something special you want, some PD disks for example, you must phone first to let us know so that we can bring it along.

Les Ellingham

Mailbag



Hailing Frequencies Open!

Sub-space communications have been re-established!

After last issue's small helping of mail, I'm pleased to report that this time around the mailbag looks healthier. I hope this trend continues. Without more ado, on to the letters ...

Allan J. Palmer

BLITTERCHIPS ... AU REVOIR ... BUT NOT GOODBYE

We have mentioned a shop called Blitterchips in recent issues who offered support for the Atari. Like almost everyone they have come across a few problems and have asked us to print the following letter.

Dear Editor/Subscribers,

I am writing this letter to your goodselves as to the current position of Blitterchips.

As many people are aware Blitterchips is a small company set up in Stourbridge to provide the local and widespread users of video games consoles and computers with an authoritative and informative alternative to the high street shops who generally are not very helpful.

Sadly, whilst Blitterchips is a viable business and has been for the last two years or so, I have decided to close the shop premises at 115A, Bridgnorth Road, Wollaston. This was not an easy decision but, nonetheless, one which I felt was necessary. The reasons are many fold and, unfortunately, outweigh the good reasons for remaining open. In brief, adverse factors such as rising costs and particularly the vandalism factor which again in turn increases costs (Insurance, repairs etc.) have force this closure.

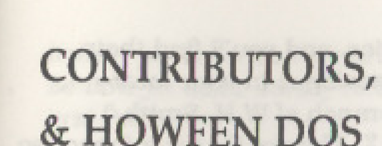
I would like to point out, however, that we are by no means beaten and shall continue to operate from market stalls and by mail order. We shall, more than ever, promote Atari products and endeavour to persuade more people to subscribe to the excellent magazines such as NAU.

A final note to all the people who sent orders for the Starfighter 1 joypad and wondered what had happened. My sincere apologies for the delay in despatching these items to you. All orders will have been fulfilled by the time this letter is published. All goods are guaranteed and should anyone have any difficulties please return the offending items to the address below for immediate replacement. For general enquiries please ring the telephone number given at any time.

Again may I thank the team at Page 6 for their assistance and may we all look forward to a brighter future together. And a special thank you to the hundreds of customers that supported Blitterchips through this difficult period.

Keith Hughes, Blitterchips, c/o 20 Collett Close, Penfields, Stourbridge, West Midlands DY8 4HS. Tel. 01384 823457

❢ *It is always sad when someone who is trying to support the Atari has problems. Let's hope that things get better for us all in 1995. Ed.*



CONTRIBUTORS, & HOWFEN DOS

Stan Shearing writes from Southall, Middx. (an area I used to know well when I was a youngster - back in the dark ages B.C. - Before Computer!). First Stan makes the following observation:

"I would like to endorse Frank Atkin's comments in issue 68 re Dave Richardson, for whom nothing seems to be too much trouble."

Thanks, Stan - it's good to know that there are plenty of reliable and helpful Atarians like Dave about. However, Stan does continue "I regret this does not seem to apply to one of the NAU regular contributors (who shall remain nameless) - hoping for a quick fix I wrote to this gentleman (enclosing a SAE) in February '94 - I may have asked a silly question, but he could at least have sent me a silly answer ..."

❢ *[Well, that's got us all thinking Stan about who the guilty party is. Chances are it's probably me! Ed.]*

➾ *On to problems from Stan, who has* "...attempted to use Dave Sargeant's File Segmenter (issue 66) to break up the docs on SuperDOS.5 without success. I found the first segment overflowed the buffer in my word processor (AtariWriter), but segment 2 consisted of only 2 lines! I decided line 120 "BSIZE" could be the one to alter and made it 10240, but nothing seemed to work - I still overflowed. I am now wondering if my 65XE has too small a memory to use the program ..."

❢ *I haven't had a chance to experiment with this utility yet Stan, so unfortunately can't give you an answer. Maybe one of our readers can help? I don't believe you should have a problem with a 65XE.*

➾ *Stan has also been using the HOWFEN tape to disk transfer utility from Stuart Murray's Futura 4 disk.* "I successfully transferred Snooker and Pool, Airstrike II and Missile Command. Flushed with success, I thought it would be nice to have more than one game per disk, so I loaded DOS 2.5 to look at the directory, and that is my problem - although the games boot and play perfectly, all that shows in the directory is "000 FREE SECTORS". It isn't really a crisis, but it is intriguing - any answers?"

❢ *I'm not sure what your objective was Stan, but in terms of the directory display, I'm sure this is the result of using DOS 2.5 to examine a non-DOS 2.5 disk. The HOWFEN utility doesn't use standard Atari DOS, so instead of finding the Atari DOS directory beginning at sector 360, DOS 2.5 finds whatever the HOWFEN format has put there, i.e. the HOWFEN directory is in a different place. Are there any HOWFEN experts out there who can supply more details? Perhaps you'd like to use a Sector Editor, Stan to examine the disk and let us know what you make of the format?*

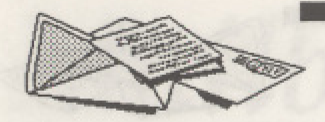
INK-JETS and KEYBOARDS

Our self-styled W.A.C.O. (that's Wacky Atari Classic Owner) M. Tomlin from Basildon in Essex sends the following:

"I read your answer to me in Page 6's Mailbag on the refilling of ink-jet printers. Thanks, but I have been filling it with normal Parker bottle ink which has worked well - so far 6 times but I think I will have to buy a new cartridge soon as the cartridge is showing signs of wear now. It's been a lot cheaper than the refill kits you advised me to buy.

I would like to ask - are all P.C. Computer Keyboards the same, i.e. will a keyboard from one P.C. work on another, I recently got a PC, which works, from a boot sale for £10 but which is without a keyboard. It has a 7 pin (Din type) connector on the rear where the keyboard should plug in. I have never used a PC ... yet."

❢ *Well, M - not being a connoisseur of PC hardware, I'm uncertain as to the compatibility of PC keyboards, but I sus-*



pect that you should find them fairly interchangeable. There may be the occasional odd discrepancy - I believe the keyboard for the Acorn RISC-PC has one key (the vertical straight line - whatever that's called) that doesn't match with the "standard" PC configuration. There's probably a configuration program within the PC operating system for configuring the keyboard (US vs UK, etc.). Incidentally, I seem to have recollections of adverts in the U.S. Atari magazines of the 1980s for PC keyboards with Atari interface connections ....

➡ A subsequent letter from M. Tomlin confirms that he has continued to have success using his Commodore MPS 1270A ink-jet printer with his Atari. A £2.20 bottle of black Parker ink has allowed him to re-fill the cartridge 14 times before it has refused to work (possibly from a build-up of stale ink?). "Waco" Tomlin identifies that his Commodore MPS 1270A "...prints the pound symbol with its dip switches set as follows:

ON = 3, 4, 6, 7, 8

OFF = 1, 2, 5

Using the hash symbol in TextPro, SpeedScript or Mini Office II word processors produces the pound symbol when printed. It works very well with every piece of PD software I have tried from the Page 6 PD Library including all versions of Daisy Dot. The only program I find that this printer will not work with is the Label maker utility from Mini Office II. Also on the subject of printers, will a laser printer work with a 8-bit system?"

❢ *The answer Mr T is "Yes, it can!" I refer to the final issue of Ben Poehland's late, lamented Atari Classics magazine (vol. 3/no 2 April 1994). In the "Wild FONTier" column, Daisy Dot 3 expert David Richardson reports that he "...has an Epson Action Laser 1500 printer. It has built-in Epson FX, LQ, etc. printer emulation. By using the control panel on the laser printer, you can set it to think that it is an old Epson dot-matrix printer, and then you can hook it up through either its serial or parallel printer port." So if you happen to have a laser lying around, why not try it with your Atari Classic?*

➡ *"Waco" also reports that he has problems running the MegaBalls demo disc on his 130XE - any ideas?*

DISKS AND DISK BOXES

Further to enquiries about sources for 5¼" disks and storage boxes, D J Iontton (I hope I've deciphered your name correctly) of Wivenhoe, Essex suggests Maplin Electronics as a supplier. "There's over 30 stores nationwide and they operate a mail-order service, and you'll find their catalogue in your local branch of W.H. Smith."

❢ *Thanks for the information D.J. [Historical note here: back in 1981, Maplin Electronics were one of the first retailers in the U.K. of the (then new) Atari 400 and Atari 800 Home Computer Systems, and built up a large range of imported software for the Classic Atari.]*

REPAIRS & ST CONTENT

Ted Sole from Ormskirk, Lancs writes that he has "...owned an Atari 8-bit for nine years and it still holds my interest. My main concern being if it should need repairing. Is there a firm that offers repairs?"

❢ *As far as I'm aware Ted, there's no commercial firm that will repair the Classic Atari; however, this subject has been covered in past Mailbags - off the top of my head, among the people to get in touch with are Derek Fern at Micro-discount, Sid Berry and the TWAUG gang. You should find details in past issues.*

➡ *Ted also observes* "Now that two more ST magazines have gone, how long before there are none? I also own a STE - will NAU give more coverage in the future?"

❢ *That's a question for our esteemed editor and publisher - perhaps it may even be time for some sort of Readers' Poll?*

ATARI CLASSIC AND PC

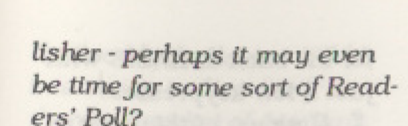
Talking about PC keyboards leads us on to this letter from Philip M. Brown in Ipswich, Suffolk:

"Sad as it may be, it seems that the demise of the Atari 8-bit, and therefore of New Atari User, creeps ever closer. the number of cheap second-hand power supply units and various other items associated with the XL and XE machines to be found in bargain bins of certain computer stores testifies to this fact. It appears that the ST too will soon follow the path to oblivion. I have greatly enjoyed using my second-hand 800XL and always look forward to the arrival of New Atari User in the post, so I will be very sorry if it all comes to an end. However, I believe there is a way to extend the life of the Atari Classic. When I can afford it, I would like to purchase an IBM-compatible PC. The problem is that, being a writer of science-fiction (unpublished as yet), I have about a quarter of a million words on numerous Mini Office files that I would like to convert, not to mention database files. Now I am sure there must be a great number of people like me, not really interested in games, who use their Classic Ataris for serious work. Therefore it would be a great advantage to be able to transfer files to an IBM clone, or perhaps obtain the hardware to allow the Atari Classic to emulate the IBM."

❢ *Well this seems to be a "hot" item at the moment. Although I think you've got it the wrong way round in your last sentence. What is available now is the ability to emulate our beloved Atari Classic on an IBM-compatible PC, notably using the PC Xformer software. I believe the guys at TWAUG have already started experimenting with this and Dean Garraghty may also have experience of this. With the ability to use a laser printer as described in my response to M. Tomlin, the Atari Classic and the PC seem to becoming quite friendly! Has anyone out there got to the point where they can produce a good in-depth article on the extended life of the Atari Classic on a PC platform?*

AU TOOLKIT and MONITORS

Regular correspondent Brad Rogers from Southampton notes: "One additional benefit of the reduced size (of NAU) is that the postman can now actually post the magazine through my letterbox rather than leaving it on the doorstep. I have a disk subscription, so the larger envelope with DO NOT BEND printed on it meant it wouldn't go through the letterbox!"



Brad continues with observations on recently asked questions:

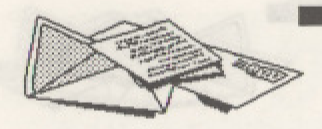
"In issue 70, Brian Arnold asked about the AU ToolKit - he wanted to know if it was possible to transfer this suite from cassette to disk - I believe that most of the utilities were started as AUTORUN files. If this is the case then it is not as easy as copying from cassette to disk and renaming as AUTORUN.SYS because the startup code required for cassette or disk boot is different.

Peter Foote wanted to know what monitors can be used with the Atari Classic - any with a Composite Video input and, optionally, audio. Personally I use a Philips CM883 Mk II, but these are becoming hard to find since Philips no longer make them. Alternatively, any TV with a SCART socket should do since the full implementation of that standard includes both Composite and RGB in/outputs."

❢ *Thanks again for your feedback, Brad.*

MEMORY and BETA LYRAE

From Ballymoney in Co. Antrim, N. Ireland, Nigel Henry reports that he has



"...recently upgraded my 800XL to 256K with the Wizztronics upgrade (from Micro-Discount), a project which I thoroughly enjoyed. The main reason for my upgrade was so that I could transfer large tape programs to disk using TransDisk IV. This has been a very successful project with 90% of all my programs now running from disk. However, it does seem like a bit of a waste to have 256K of memory and only use it with one application. I was wondering if there were any interesting applications where I could make better use of the increased memory? I know that I can now use a (large) RAMdisk to speed up operations, but are there any programs that can use the extra memory to its full potential?"

You've identified the reason why I haven't upgraded my Classic Atari's memory capacity - what can it be used for? It's the old problem, no-one is going to develop an application using increased memory unless they know it's got a wide enough audience to distribute it to ... Open invitation to all readers - tell us about applications which make full use of enhanced memory on the Classic Atari!

On the down side of memory upgrades, Nigel bought and successfully played 'The Tail of Beta Lyrae' (re-reviewed in issue 66) before he upgraded his 800XL memory. "The review states that the program will run on all Ataris; however it refused to run on a friend's 130XE - the program loads fine, but when it finished loading nothing happened. After my memory upgrade, it behaved the same way on my 800XL. Does anyone have any idea why this might happen? All my other programs work perfectly."

Well, you have me puzzled there, Nigel - I would expect the game to run on a 130XE, but it's not one I've ever tried; can someone confirm the status of this?

While mentioning TransDisk IV above, Nigel "...would like to thank Raphael Espino, whose letter in issue 68 prompted me to obtain a copy of issue 61, where his solution to transferring files in Enhanced Density works perfectly!"

DOS to BASIC?

From Salisbury, Wiltshire, Dennis Fogerty has a conundrum: "I know that I can move from BASIC to DOS by POKEing location 1016,1 and pressing RESET; but I have yet to discover how I can return to BASIC from this state - that dreaded message "No cartridge" always comes up. When I am using Turbo BASIC, together with MEM.SAV, I can return from DOS to BASIC by running at memory location 2080. My question is - is there an address in DOS 2.5 which will transfer me back to BASIC with just a few keypresses?"

Hmmm ... I think we're stretching things a bit here - the POKE 1016,1 disables the BASIC ROM, so any subsequent attempt to reload BASIC must involved re-setting the flag to indicate that the BASIC ROM is available...

MAG STORAGE and DEVON USERS

Kevin Cooke (another of our regular correspondents) from Exeter, Devon has the following comment on storing his new format NAU issues: "For the cost of a few A5 plastic sleeves (currently selling @ 75p for 10 in my local W.H. Smith) and a ring binder, the new format NAUs can be effectively stored in a neat and tidy way. I have also found that this helps to keep the magazines flat and prevents the covers from getting turned up corners."

Kevin also asks: "..are there ANY other Atari 8-bitters close to Devon who read Page 6 and might be interested in meeting occasionally to swap hints and tips, give programming help, repair hardware, or even to play games against? I know of no-one who owns any sort of 8-bit computer let alone an Atari! If anyone is interested, they can contact me at 36 Buddle Lane, St. Thomas, Exeter, Devon EX4 1JH."

Good luck, Kevin - it'll be interesting to discover if there's a pocket of Atarians down in the South-West.

1050 PROBLEMS

Finally, we have a plea for help from Dennis Hedges of Southampton:

"My 1050 just keeps switching on and off all the time. Not the power supply, just the drive. I had a look inside but all looks to be OK. I live in hope."

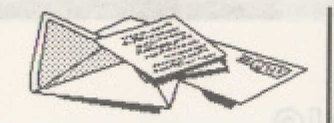
What words of advice can the NAU readership offer?

And that wraps up another Mailbag column! I hope to see a continued chain of communication for next issue. In the meantime, what can I ramble on about to fill up the rest of the page? Ah yes, I'm compiling this just a couple of days after seeing "Star Trek: Generations" at the cinema - I've got to admit I was a bit wary of this, feeling it would be somewhat shambled together and wondered if it could retain the atmosphere of the excellent "Next Generation" TV series. I was very pleasantly surprised - this movie is very well done, making great use of various bits of the Star Trek background that have sprung up over the years and filled in some of the gaps. It is very well-paced and, considering the number of principal characters, everyone gets a chance to take centre stage (albeit sometimes briefly). There is drama and there is humour with a (as always) superb performance from Patrick Stewart and (some might say surprisingly) a fine final portrayal of James Tiberius Kirk by William Shatner. The special effects are magnificent (the space scenes, the astro-cartography chamber, and what they do to the Enterprise-D in the finale), but they don't take the film away from the actors. As you might guess from the preceding, I LIKED this film - my only question is: what are they going to do for the next sequel?

That's all for this time. "Beam me up, Scotty!"

Air your views on all things Atari or help your fellow users with their queries - even ask for help yourself. It's all interesting, if only you write it down. Here's the address:

MAILBAG
NEW ATARI USER
P.O. BOX 54, STAFFORD
ST16 1TB



DEMOS WHY BOTHER?

Daniel Baverstock explores that strange computer phenomenon - the demo - from the collector's viewpoint

The World of the DEMO crew. Populated by strange people with Atari 8-Bits and square eyes with nothing better to do than sit around in partial trances typing in endless lists of numbers which apparently make sense to them.

Usually to obtain recognition, these groups give themselves a name. It can be anything from hip sounding names like 'Copy Crew Amsterdam' to 'Gizmo magic', from 'Gnome Design' to 'The World Federation of Mad Hackers'. In addition to a group name, these strange people often give themselves an alias. Sometimes named after monsters, cartoon characters or computer jargon; Frankenstein, Bartman, Beeman, Prizm, Detail, Lord of Darkness, and Stormtrooper! Careful observation has concluded that this could be because they either want an exciting sounding alter ego upon which they can place the blame if anything goes wrong or because they have awful sounding or unpronounceable name in the first place! Then again, of course, it maybe neither.

Demo crews spend their free time trying to work together on ideas, compiling the various parts on computer, de-bugging, rewriting and arguing, until one day they emerge into the light with most of their initial idea intact and finally on disk. Then somebody leaves it on a radiator, turning it into a globby mess, thereby forcing them to start all over again! Another 6 months pass and they again emerge, short of one unfortunate team member, (well they had to eat something!), and blood pressure higher than that of a 110 year old's after competing in the London marathon! They have finished their megademo!

WHY DO THEY DO IT?

Why do programmers program demos? You can't play them like a game, and the appeal doesn't last long after you have watched it once or twice. After all, all demos on Atari are the same aren't they? Once you've seen one you've seen them all? Well, perhaps so in some cases, but demos, especially megademos, do have some lasting appeal and are surprisingly very important for the Atari 8-Bit!

Why? The word demo is actually an abbreviation for DEMONSTRATION. Yes, it's true! Demos introduce new techniques, faster ways of accomplishing a task, and memory saving tips. They introduce other programmers and owners to new effects, such as better sound and graphic displays. They are like an information medium through which new developments are shared and where groups can send 'Greetinx' to other groups and the rest of the Atari owning community. It's also a great opportunity to show off!

Through making demos programmers of games and utilities and hardware freaks can produce better programs for the Atari. You can see the benefits by looking at games that were programmed in the early 1980's like the unbelievably @!#$! Bounty Bob games, then look at games like Draconus, Zybex, and the new T-34 tank battle, especially the title screens, music and sound FX. Same computer, far more advanced and new found techniques. These are most likely to have been inspired by demos, as well as other games.

TAKING ADVANTAGE OF NEW DEVELOPMENTS

More and more demos are using digitised music and sound effects. Relatively recently stereo sound upgrades were introduced to the Atari, and so demos started to take advantage of this. One such demo is the **World of Wonders**, a mono sample and chip music demo collection converted to stereo.

Memory upgrades introduced in the last five years have opened up new avenues for demos and games. Although programmers do still tend to stick to 64K limitations, leaving out the extra 64K that the 130XE allows and even more with 256K computers. These enhancements will allow bigger games with impressive intro-screens, containing more graphic detail, animation and sampled sounds. Aside from demos, Ke-Soft's Brundles makes use of memory upgrades and so does the PD game Megablast.

Compression techniques allow far greater demos on smaller capacity machines, and take up less disk space and accessing time. In fact most of the megademos use compression, some continually throughout the demo. This is used to great effect in the Dancing lady demo from the World Federation of Mad Hackers' The Top megademo.

CREATING SOMETHING ORIGINAL

For a while demos had become too similar and unoriginal. To a certain extent this is still the case. The most common demo style is the horizontal scroller with music and images scrolling past, and coloured DLI bars in the background. After the initial effects are included in a demo, any future demos lose their appeal and excitement, leaving only greetings to read. Many demos, however, are extremely original, especially Megademos which contain a varied amount of demos-within-demos. Each loads and unpacks a stage at a time, some linked, some unique in the collection.

The Top Megademo from the disbanded WFMH has three parts each with around six to seven demos. One crams over 400K of digitised data into 128K, and continually packs and unpacks it in real time. It also informs you that 512 colours are possible on screen at the same time, contrary to the 256 colour limit. It has a good sampled tune or two and has a great demo in which 25-30

Greetinx to ... HARD-SOFT, ABBUC, POKEY, HUREK, CIA, GIZMO MAGIC, THE GERMAN CRACKIN ARTISTS, THE GERMAN CHAOTICS, TACF, XL-SOFT, VETERANS OF WFMH, SHADOWS, BLOODY

.... GNOME DESIGN..... and TO FRANKENSTEIN, MAGNUS, PRIZM, SOLAR SYS, THORGAL, THE EXTERMINATOR, THE UNKNOWN BASE, SOLO CODER, SPY HUNTER,

scrollers are on screen at the same time. **The Top Part 3** introduces a great reflection technique to give the impression of a glass surface, mixing colour and hi-res text together.

Excellent megademos like the **Cool Emotion** demo from Hungary's Hardsoft, or the **Sweet Illusion** megademo programmed by now Amiga crew the Shadows include some mind-blowing new effects. The Digi/chip music on the Cool Emotion demo is great, as are the Sweet Illusion demo's shaded revolving polygons, moving much faster than previous attempts at 3D animation and light sourcing.

USING SAMPLED SOUND

Demos have shown us that three samples can be played at the same time, and that the screen display can remain on during sample play. In addition, sampled sound is mixed with chip music. The last few demos on the **Unity Project** have a great tune, and the Vocab demo on the NOSAUG vol.1 has a good mix with two drums, cymbals and claps amongst average chip music. Again I have to mention Hardsoft's Cool Emotion demo for great sampled sound.

Module sampled files converted from other machines are also creeping into demos, Friday-Soft's Fampy files especially. Another mod player has one of the best MOD files I've heard, the FYC song "She Drives Me Crazy". Long samples seem to have been included in Megademos, the most well known are those on the **Big Demo**, some say the best demo. I would have to disagree, placing it in fourth place after Sweet Illusion, The Top Megademo and Cool Emotion. **The Phantasy Demo** is supposed to be very good, totalling five techno tracks, two requiring 128K, and the new **GTracker** demo disk contains some good techno tracks.

Other extremely good demos and Megademos available include the **Hurek Demo Collection vol. 2** available from NOSAUG, which has a great International Karate Plus animation demo, and a Hi-res demo that mixes two colour pictures together. The NOSAUG PD demo vol. 1 HTT/WFMH isn't as good, but it is worth having in your collection.

VISUAL EFFECTS

Colour plasma effects and pixel plotters are the latest phase which demos seem to be going through, and some look great.

Visdom and **Visdom II** single demos have some of the most amazing colour effects used in demos. Visdom for example, has an excellent colour wave that washes over the top of the demo screen. Visdom II has absolutely amazing colour ripple, patterns of colour with the same effect shown by those oil ornaments you find in weird shops in seaside towns!

The Unity Project has a great demo in which graphics modes 8, 9, and 15 are displayed on the same scan line, with a great tune and ocean blue scroller. This wasn't commonly thought possible until this demo. HobbyTronic 92 is another worth having for it's small yet interesting effects.

The Halle Project, (HobbyTronic 1993), is also one to recommend, starting with a top notch long sample with the credits. Play it through your Hi-Fi to really hear this one, although turning up the monitor volume still sounds great. I mainly recommend the Halle Project because it contains Visdom II, the excellent sampled intro and a Fampy mod file, Crystal Hammer. The majority of the other demos have some nice effects, but nothing spectacular.

HARD TO FIND DEMOS

One demo I've desperately tried to get my hands on is the **Intel Outside** demo. Among many other mindblowing effects, it is said to have an excellent 3D cube with a picture texture-mapped onto the sides. However, I was informed that it wasn't to be available as it infringed a copyright, or something to that effect. Another hard to find demo is the predecessor to Hungarian demo team Hard Soft's Cool Emotion Demo, **Veronika**.

A bargain buy I would recommend is the **Double Demo Pack 2** available from ANG software. It includes the excellent double sided Sweet Illusion demo from the excellent Shadows team, Bitter Reality and Ray of Hope. Costing around £2 this is real value for money.

ONE-OFF DEMOS

Impressive single screen demos can be equally as impressive as megademos, although not as long lasting. **Shiny Bubbles** is a great 10 frame animation of rotating spheres on a landscape and looks great. As does **Video blitz**, a landscape of disks and pools of water wizzing past. Both run on 128K machines only. **Compy Shop** is one demo comprised of several parts, around nine or so which reside in 128K. This is one of the first demos I purchased, and is well worth having in a demo collection.

WHERE AND WHO?

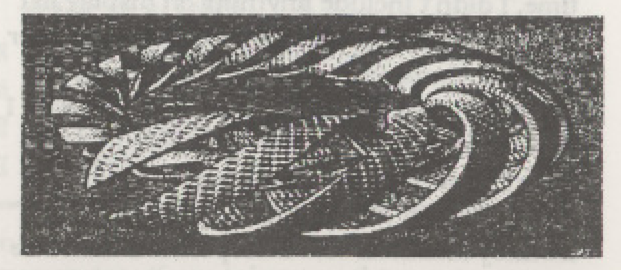
Most demos and megademos come from Europe, mainly Poland, Germany and Holland, while very few come from the UK. As far as I know none have emerged from the USA, Canada and Australia. There are as mentioned earlier, joint efforts every so often which produce some good megademos, (Halle Project, Unity Project, Big Demo, The Great British Demo Collection). Many UK produced demos appear on UK disk based magazines.

Apart from it being very rewarding to design and complete a demo, these programmers and groups certainly provide an important link between contemporary programmers, teams, and all Atari owners. They are almost as important as programming games.

THE FUTURE

I would like to see a development in the use of samples, both in music and FX, and perhaps of higher quality than the 6-8khz samples currently used, (16khz). Also more 3D filled vector demos, perhaps showing actual objects, a craft for example. Some great animations and sequences would really be excellent. I would also like to see demos utilising 130XE more often. I am sure there are just as many of them as there are 64K machines.

Strangely, almost all demos are PD, or sold for the cost of the disk and postage only. Therefore the demo crews and programmers have virtually no financial gain from making these demos. Just shows you how strange they all are, doesn't it?



CODERS, THE COMTECH CREW, HTT, HUREK, AURA, CSS, DTT, COPY CREW AMSTERDAM, FRIDAY-SOFT, BENJI SOFT, NNC, BRAIN SOFT, OUR-SOFT, TOP CREW, DIGITAL COMPUTING, L.K. AVALON, BEEMAN, ANGEL, CINO, LUCIFER, HAWK, ARC, STORMTROOPER, LORD OF DARKNESS, THE UNKNOWN LINK, TOMOHAWK, ELECTRON, and ALL OTHER CREWS and PROGRAMMERS

DISPLAY LIST INTERRUPTS

Ann O'Driscoll expands on her earlier article on Display Lists to show how you can use interrupts to enhance your programs, even if you no nothing of machine language

I wrote an article on Display Lists in Issue 67 of New Atari User - what they were, how to modify them, and so on. At the time, I didn't include anything on display list interrupts as I thought that it would be better to concentrate on the basics. The programs and notes here are an attempt to fill the gap. I hope to show that display list interrupts are not at all complicated to set up and run: Essentially all you have to do is modify a few memory locations and incorporate a machine code routine in your BASIC program.

WHAT IS AN INTERRUPT?

An "interrupt" is a system used by the computer to halt an operation and do something else. The two kinds of interrupt that most people have heard of are the Vertical Blank Interrupt and the Display List Interrupt. A Vertical Blank Interrupt (VBI) is a routine which is run in the time it takes the electron beam which scans the screen to get from the bottom right corner back up to the top left corner - about 1/50 second. The operating system uses the vertical blank interval to update the timers and other memory locations, and user-written routines can be run in addition to these "system" interrupts. For instance, VBIs are often used to play background music in a program.

A Display List Interrupt (DLI) causes the screen display to temporarily stop processing in order to run a machine code routine supplied by the programmer. This type of interrupt is activated when the Antic chip finds a special instruction in the display list. Unlike the VBI, you only have a relatively short time (depending on the graphics mode) to run a display list interrupt. Because of this, DLIs are used for small routines like changing screen colour or Graphics mode.

SETTING IT UP

To set up a display list interrupt you must:-

- Write a DLI machine code routine and put it into memory
- Tell the computer where to find the routine
- Change the display list for the line(s) where you want the interrupt to happen, and
- Enable the interrupt (i.e. tell Antic you're using a DLI)

THE MACHINE CODE ROUTINE

You don't have to be an experienced machine code programmer to set up a DLI routine; you just need to get the hang of a couple of concepts.

First, the accumulator. This is the Atari processor's main register, or place where numbers are stored and manipulated. The machine code language instruction 169 (assembly language mnemonic LDA) followed by a number loads the accumulator with the number. The instruction 141 (mnemonic STA) stores the contents of the accumulator in a memory location specified by the two bytes after the instruction.

Second, the stack. This is the group of memory addresses from 256 to 511 (page 1 of memory). Like the accumulator, data can be written to and read from the stack using machine language commands. The instruction 72 (mnemonic PHA) pushes the contents of the accumulator onto the stack. The instruction 104 (mnemonic PLA) takes a number from the top of the stack and puts it in the accumulator. The stack works on a last in first out basis. If you add something in, it goes on top; if you take something out, you start with the most recently added number.

```
ZP 100 REM  DISPLAY LIST INTERRUPT #1
IK 102 REM  ----  UPSIDE DOWN TEXT ---
QY 104 REM
CI 110 GRAPHICS 0:DL=PEEK(560)+256*PEEK(5
   61)
FJ 116 REM Read the machine code routine
RH 117 REM into memory at location 1536
QJ 118 REM onwards
DM 120 FOR N=0 TO 7:READ B:POKE 1536+N,B:
   NEXT N
QJ 130 DATA 72,169,4,141,1,212,104,64
CN 131 REM The MC numbers mean the follow
   ing..
OM 132 REM 72=PHA Push accumulator onto s
   tack
DX 133 REM 169=LDA Load the accumulator w
   ith...
KG 134 REM 4=Number for upsidedown text
PC 135 REM 141=Store the accumulator in m
   emory location ...
KC 136 REM 1=Low byte and 212=High byte g
   iving 1+256*212=54273. This is the har
   dware character mode control
FJ 138 REM 104=PLA Pull the accumulator f
   rom the stack ie restore original cont
   ents
HM 139 REM 64=RTI Return from interrupt
HL 149 REM Change the display list
DP 150 POKE DL+10,PEEK(DL+10)+128
YE 159 REM Put the mc address in the DL v
   ector at 512/513
VX 160 POKE 512,0:POKE 513,6
OA 169 REM Enable the interrupt
OR 170 POKE 54286,192
SI 180 LIST
```

The routines in the programs here all begin by saving the contents of the accumulator to

the stack (decimal 72) and end by restoring the contents of the stack to the accumulator (decimal 104). In other words, they use PHA and PLA so that the accumulator is left unchanged after the routine. (The computer also has other registers. If we were using these we would save and restore them too). The final instruction (decimal 64, assembly language mnemonic RTI) tells the computer to return from the interrupt.

The other instructions involve putting chosen numbers in the accumulator and then loading them into specified memory locations. Because we are using machine code, we put the bytes directly into the hardware registers we want to change, rather than using Basic's shadow registers.

FINDING THE ROUTINE

Memory locations 512 and 513 are the computer's low byte and high byte pointers to the start of the DLI routine. DLI machine code routines, including the ones in the programs here, are often put in page 6 of memory, which starts at location 1536. In this case, the relevant program pokes are POKE 512,0 and POKE 513,6. Because the computer has only one interrupt vector, if you have more than one DLI you have to get each interrupt to change the address at locations 512/513 to point to the next interrupt routine address. This is covered in Program 3 below.

```
AZ 200 REM  DISPLAY LIST INTERRUPT #2
VT 202 REM  --    CHANGE COLOUR   ---
QZ 204 REM
CJ 210 GRAPHICS 8:DL=PEEK(560)+256*PEEK(5
   61)
UV 220 FOR N=0 TO 10:READ B:POKE 1536+N,B
   :NEXT N
FX 230 DATA 72,169,50,141,10,212,141,24,2
   08,104,64
ON 232 REM 72=PHA Push accumulator onto s
   tack
EF 234 REM 169=LDA Load the accumulator w
   ith..
JL 236 REM 50 = a colour number; red in t
   his case
JR 238 REM 141=STA Store the accumulator
   in memory locations...
QB 240 REM 10=low byte and 212=high byte
   giving 10+256*212=54282 = WYSYNC addre
   ss to synchronise display
HT 242 REM 141=STA Store the accumulator
   in memory locations ...
EK 244 REM 24=low byte and 208=high byte
   giving 24+256*208=53272 = hardware col
   our register
DC 246 REM 104=PLA Pull accumulator from
   stack
HM 248 REM 64=RTI Return from interrupt
ZL 249 REM Pokes as for lising 1 above
DS 260 POKE DL+10,PEEK(DL+10)+128
MA 270 POKE 512,0:POKE 513,6
OU 280 POKE 54286,192
SL 290 LIST
```

CHANGING THE DISPLAY LIST

You must alter the display list to call the interrupt. To do this, you turn on bit 7 of the instruction byte (add 128) at the place


```
CJ 300 REM  DISPLAY LIST INTERRUPT #3
OL 302 REM  -- FIRST DLI CALLS UP  --
IY 304 REM     THE SECOND ONE
RG 306 REM
CK 310 GRAPHICS 8:DL=PEEK(560)+256*PEEK(5
   61)
MC 320 FOR N=0 TO 30:READ B:POKE 1536+N,B
   :NEXT N
WV 325 DATA 72,169,4,141,1,212
CH 330 DATA 169,13,141,0,2,104,64
WK 335 DATA 72,169,50,141,10,212,141,24,2
   08
NB 340 DATA 72,169,0,141,0,2,104,104,64
BU 341 REM  FIRST INTERRUPT -
ZU 342 REM 72 TO 212 are the same as list
   ing 1; upside down text
EE 344 REM 169=LDA Load the accumulator w
   ith...
KE 345 REM 13=Number. Our second DLI star
   ts at memory location 1536+13=1549
IG 346 REM 141=STA Store the accumulator
   in memory locations ...
MA 347 REM 0=low byte and 2=high byte giv
   ing 0+256*2=512
AG 348 REM 104=PLA Pull accum from stack
IF 349 REM 64=RTI Return from (the first)
   interrupt
DT 350 REM  SECOND INTERRUPT -
DH 352 REM 72 TO 208 are the same as list
   ing 2
KA 353 REM 72=PHA Push accumulator (which
   has the number 50) onto stack
TD 354 REM 169=LDA Load accum with..
RA 355 REM 0=Number which will go into lo
   cation 512. In this case, 0
II 356 REM 141=STA Store the accumulator
   in memory locations ...
MC 357 REM 0=low byte and 2=high byte giv
   ing 0+256*2=512
SK 358 REM 104=PLA Pull accum from stack.
   Done twice because we used PHA twice
OK 359 REM 64=RTI Return from (the second
   ) interrupt
FZ 360 POKE DL+12,PEEK(DL+12)+128:POKE DL
   +20,PEEK(DL+20)+128
WB 370 POKE 512,0:POKE 513,6
OV 380 POKE 54286,192
SM 390 LIST
```

where you want the interrupt to happen. For instance, if you want to change the 17th line of the display list (about the middle of a Graphics 0 screen), the BASIC command would be

POKE DL+16,PEEK(DL+16)+128

where DL is the start of the display list.

ENABLING THE INTERRUPT

Memory location 54286 is the computer's interrupt enable address. Bit 6 controls vertical blank interrupts and Bit 7 controls display list interrupts. We saw above that VBIs are used by the computer for updating some memory locations, and when you switch on your Atari PEEK(54286)=64, indicating that VBIs are enabled. DLIs are not used by the operating system so we must set BIT 7 (add 128 to the byte) in order to enable them. The BASIC command POKE 54286,192 does this.

THE PROGRAMS

The three programs show some simple DLIs. The REMs in the listings should give a good idea of what is happening. In all cases, typing GRAPHICS 0 will get you back to a normal screen when you are finished with the prog-

DISPLAY LIST INTERRUPTS continued

rams, as this restores the default display list.

Program 1 uses an interrupt to print the screen text upside down after a few rows of normal text. You can print upside down characters from BASIC using POKE 755,4. The machine code routine puts the 4 into location 54273, which is the hardware register for 755.

The DLI in Program 2 changes the screen colour. This is done by putting the colour number in memory location 53272 (the hardware equivalent of location 710, for background colour). If you read the listing you will notice that the colour number is first put into location 54282. This is done to stop bluriness on the line where the colour changes. One problem with DLIs is that you have no control over WHEN on the mode line the interrupt will occur. However, POKEing location 54282 (called the WSYNC register) with a number makes Antic halt and restart a few machine cycles before the end of the line. By making Antic wait before it does the changes we synchronise the DLI with the screen display.

Program 3 was included to show how one display list interrupt can be used to call up another. We saw above that you have to do this if you have more than one interrupt because there is only one place (memory locations 512 and 513) for us to POKE the address of the DLI code. Routine 1 starts at 1536 and routine 2 starts at 1549. LINE 370 of the program tells the computer where to find the first DLI. This routine then puts a 13 into the low byte DLI vector at location 512, which enables the computer to find the second interrupt. The program combines the other two interrupts, with the first one printing the text upside down and the second one changing the screen colour. ●

DISK BONUS

ORSON

and THE ORSON EDITOR

by Joel Goodwin

A classic logic game brought bang up to date with true Atari Classic style graphics and an editor for you to create your own games

Orson had known for a few months that he was not a human but a self-aware robot. His human peers had told him that he was the first of his kind, however time and time again the humans had refused to let Orson outside of the confines of the laboratory. It was all he had known for the two years of his existence. As none of the humans understood his self-aware programming properly they had no idea how he would behave in an uncontrolled environment. But today was different. The humans had not visited him until late evening and it was then they offered him a proposition.

Apparently, the Quark reactor which powers Europe is controlled by a supercomputer. This supercomputer crashed this morning and it managed to output some random data to the reactor before manual override took over. The reactor system responded by depositing every Quark pod into the maintenance chambers beneath the reactor, which have been abandoned for many years. If the Quark pods remain out of the reactor core for too long they could rupture and lethal radiation will flood the entire reactor complex. As a consequence the reactor will have to be shut down and evacuated - the resulting power loss will cripple the whole of Europe.

The humans explain that Orson's robotic body is a lot more agile and radiation-resistant than a human in an environment-suit. They want Orson to go into the underground chambers and neutralise the pods to avert the reactor shutdown. In exchange Orson will be allowed to explore the outside world.

Of course its dangerous, but how badly does Orson want his freedom?

ORSON and THE ORSON EDITOR are available only on the New Atari User Issue 71 disk. Disk subscribers will have received their copy with the magazine but the disk can be ordered separately for £2.95 from PAGE 6, P.O. BOX 54, STAFFORD, ST16 1DR. Access or Visa orders can be accepted by telephone on 0785 213928

THE NAU ISSUE DISK OFTEN CONTAINS EXTRA BONUS PROGRAMS NOT LISTED IN THE MAGAZINE

ORSON

THE GAME Using the joystick, you must move Orson to push all of the pods in a chamber into neutralising bays (these look like squares with rotating lights). Pods are heavy and Orson will only be able to push one at a time. You must be careful where you push pods because Orson cannot pull them if they are stuck by a wall.

As the pods are radioactive Orson has only a short time before the radiation overwhelms him. The time remaining is shown at the bottom right of the screen.

Orson has three attempts at each chamber which are denoted by crosses at the bottom of the screen. If you think you have got Orson into a situation where the chamber cannot be cleared you can press START to abort the current attempt. You can press OPTION to return to the title screen.

Once Orson has secured all of the pods he must go to the exit transmat (a disc with two orbiting lights). Note that because of the reactor crisis not much power is available and the transmat will not be activated until you have secured all pods. If you succeed in clearing a chamber and getting Orson to the exit in time your score will increase and you will advance to the next chamber.

NEW ORSON GAMES The 'Orson' program contains ten chambers but you can load other games created with the ORSON EDITOR. Pressing SELECT on the title screen will access the loading menu. You can load game files from disk (which have extender .ORS) or from cassette. You can also reload the original game, which does not need to be loaded from disk or cassette.

FINAL POINTS You can start playing from any chamber. Just press the chamber letter on the title screen and when you press START you will begin at that chamber. Also, you will be rewarded if you successfully complete the original game - but only if you start from chamber A!

THE ORSON EDITOR

Now you can create your own chambers for 'Orson' and baffle those who thought they had mastered the game!

THE MAIN MENU There are four options from the main menu which are straightforward: Edit game, Load game, Save game, Clear memory. The last three options are simple to use so I will not go into any details here. The only point that needs to be made is that all game files on disk will have the extender .ORS.

THE EDITOR On the editor you will control a small box cursor with the joystick. You will also notice that there is a bar of icons at the bottom of the display. The display above the bar is where the chamber that you are editing is shown. When you press the trigger in this area you will draw with whatever object is currently selected (see below).

But what happens if you press the trigger on the icon bar? Here is the description of all the icons (from the left to right): ☛

DISK BONUS

GAME OBJECTS The first eight icons are the objects from the 'Orson' game. The object currently selected has a pink line above and below it. To change the selection place the cursor over a different object and press the trigger. Alternatively, the left/right cursor keys will work. The large 'S' is where Orson starts. There can only be one starting point. Also around the edge of the chamber you can only plot walls and blank spaces. This is to make sure Orson cannot leave the chamber.

COLOURS Next are four colour icons. If you press the trigger on one of these you can alter the colour by moving the joystick up/down for the luminance and left/right for the hue. Press trigger when done.

TIME The two digit number is the time allowed to complete the chamber. To alter this press the trigger on it and move the joystick to select the time you want. Press trigger when you have the correct time.

CHAMBER The letter is the chamber you are currently editing. Again to change this press the trigger on it and move the joystick up/down. Press the trigger again when you have the chamber you want. One thing to note is that if the letter is red then the chamber is "invalid" - in other words it does not have a start and exit. Such chambers will be skipped by the 'Orson' program. Note that if the letter is green it does NOT mean that the chamber can be completed. This still has to be checked by playing it yourself.

SWAPPING The two arrows icon allows you to swap two chambers over if you wanted them to be in a different order. The procedure for swapping two chambers is simple. First put one of the chambers on the screen (use the chamber letter icon). Then select the SWAP icon. You will notice a box will appear around it. Now you can move the joystick up/down to select the other chamber. Press the trigger when you have it and the two chambers will swap places.

MENU The icon that looks like a clipboard takes you back to the main menu.

FILL The 'X' icon can be used to fill the screen with a game object. To do so select the object you wish to fill with (though not the start symbol) then hold down the trigger on the FILL icon until the screen is filled with the object.

USEFUL INFO In general, pressing OPTION will abort things. Normally it will send you back to the main menu but if you press it on the main menu it will bring up the editor. It will also abort a chamber swap. If you are going to create a big chamber then you might find this helpful: Select the wall object and fill the screen, then select the floor object and fill the screen. This gives you a basic frame to work with.

I have a couple of hints about creating your own chambers but feel free to adopt your own approach. Firstly, chambers with lots of pods can be sometimes frustrating because once you have worked out what to do it is very easy to make mistakes with so many pods. Secondly, be generous with the time - "thinking" time needs to be included.

Well, that's about it and I hope you spend many hours creating your own devious chambers and spend many more hours watching others trying to complete them!

HEY! HEY! it's The TIPSTER

Your regular Tipster seems to have gone missing at the moment so the Grand Tipster is stepping in to sort out the column this issue. Mind you the Grand Tipster is not so used to actually doing any work so if the style is slightly different you'll know why. The recipe this time is to mix a few tips that have been left over from past issues with a sprinkling of brand new tips that have found their way to the Tipsters basket in the past few weeks to produce a heady concoction that will, hopefully, delight you all.

If anyone sees the Tipster around before the next column do ask him if he still has that little yellow disk!

THE BRUNDLES

Remember last issue when Les Williams couldn't get past level 98? Well here is a solution all the way from Germany (where else!) courtesy of ***Bodo Jürss***.

What you need to do is get hold of a sector editor after first making a backup copy of your Brundles level disk. Now find the following

Sector 831 or 33F(Hex) (on Side B!)
Byte 19

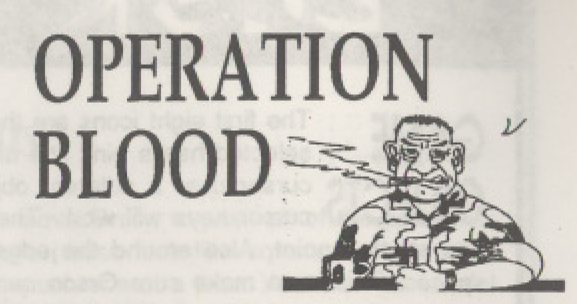
and change the 60 to 99

This gives you 99 seconds to solve the level (now it's possible!). And just in case you can't solve it Bodo gives us the codes for the final two levels

99 = CHEAP
100 = HIEND

Johnny Chan also sent in the codes for Brundles levels 61 to 100 (presumably before he read them last issue!). Thanks Johnny!

OPERATION BLOOD



First off this issue is ***Steve Nicklin*** of Tamworth who has some tips for **OPERATION BLOOD**. He says to use the pause and position cheat from a few issues back on all levels but level 1.

The best Bomb strategy

Level 1 - Don't use bombs. Shoot down all enemies
Level 2 - Don't use bombs. Shoot down all enemies
Level 3 - Use four bombs
Level 4 - Use as many bombs as is needed
Level 5 - Don't use bombs. Shoot down all enemies
Level 6 - Use all your bombs.

If the game is still too difficult then try the next few tips.

- Get rid of the tanks and helicopters straight away.
- Get rid of rolling in commandoes straight away. Leave the little men until last.
- ALWAYS kill the stalkers on levels 5 and 6.
- On some levels you will lose all your ammo. Persevere with the ammo that is given to you about every 20 seconds. This is not 20 seconds of game time though, keep it in pause mode for about 20 seconds.
- Shoot slightly to the side of the commandoes to kill them.

MORE WORM

Steve has also got some tips for ***WORM IN PARADISE*** on how to get into the Main City.

Take bench, E, S, drop bench and stand on it, take apple, eat apple, W, W, W, north, take behemoth, wait, drop visor, S, W, W.

TIPS FROM THE HORSES (AUTHOR'S!) MOUTH

Richard Gore has been in touch with a couple of programmers who wrote some of the classic Atari games and what better place to get some hints and tips than from the guys who actually did the programming!

CRUMBLES CRISIS

There are no cheats in this game but if you have the disk version the levels are completely interchangeable. If you look at the filenames in the disk directory it will be obvious which ones to change. Note though that you SHOULD NOT make any changes to your master disk as you may corrupt it if you are not careful. Always work on a backup copy. No-one takes any responsibility if you zap your disk!

SPACE LOBSTERS, REBOUND and TAGALON

have no cheats, so all you hackers who have been trying to find them, tough luck!

BLACK LAMP

Type **FOREST**, the name of Richard Munns' favourite football team (the programmers both hail from Nottingham) during the game to make yourself invincible. You may restart a game by pressing Reset but this will disengage the invincibility.

CAVERNIA

Type **STEVIE NICKS** (with the space) to jump to the next level

Thanks to Richard Gore for sending the info in and to Ivan Mackintosh for supplying the information.

HELP WANTED ... HELP WANTED

Robert Milton is looking for a Princess. Now before you ladies all send in your photos, the one he wants is only to be found at the Dungeon of Koray in **THE ETERNAL DAGGER**. Anybody found her yet?

Ye Olde but Goode Tips

A few tips found their way in from *'Ye Olde Atari 8-bit Owner'*, who it seems would like to remain anonymous.

When playing **SPACE INVADERS** shoot the aliens in their column formation as they appear on the screen. Repeat this for each column (depending on the ability of the player), i.e. follow the appearing aliens across the screen while continually shooting (and avoiding alien fire). Until the full alien formation is on screen, concentrate on shooting the lower aliens, i.e. in rows. The idea in shooting in columns initially is that the aliens must march across the screen from one side to the other before they can descend to a lower row and by shooting in columns you give yourself more time than by shooting randomly or in rows at the lower aliens. Also the ship that scoots along the top, despite its bonus, should be regarded more as a distraction as the time spent shooting it slows you down (clever game design ploy). This method also works for similar games that use aliens marching across the screen.

When playing **MEGABLAST** (by T.K.), and on pressing fire you you hear that familiar 'PHUT' sound, looking at the energy bar gives you no indication of how many more shots you can fire. If you look at your score and press fire, however, your score will decrease (so you must now monitor your score). Having a shield on helps and by shooting bonus items your score can be brought up (an instant fix for a big score would be to start a large explosion - a shield is necessary for this). Or find a safe spot and wait for a cell, to charge your energy bar.

A quick tip for **PHAROAH'S CURSE**. On the title screen press OPTION and when prompted for a code, type SYN. Then press any key and continue the game as normal. This starts the play at level 1.

Perhaps Ye Olde Atari 8-bit Owner doesn't want people to know that he is still playing Space Invaders! Nothing wrong with that, mate, the old uns are still good uns!

As always keep the hints and tips coming. You have all done really well this time but we need a constant replenishment of The Tipster's lunch box. Remember a Tipster without his tips can turn really nasty.

Send your hints, tips, maps, solutions, strategies, advice, cheats, words of wisdom, cries for help and whatever else you can think of to:

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I'M PROUD!

James Austin describes a day in the life of a proud 14-year old 8-bit Atarian

It's not easy being a 14-year old 8-Bit Atarian. Everyone at school nowadays has Amigas, PCs, Amstrads and even Jaguars(!), whilst I regularly worship my trusty Atari 800XL with 1029 dot-matrix printer, 1020 printer/plotter, 1050 disk drive and 1010 cassette recorder. Children at school continuously go around bleating *'What computer have you got?'* .. *'Oh, a 32-Bit PC with monitor AND sound card'* .. *'Oh, I'VE just got an Atari Jaguar with 4 games. Got it the same day that it came out'* .. *'Oh, have you! I've a ...'* and so on. The younger children at my school are often chatting about what computer their Daddy has just brought them. Even I get asked sometimes. When asked, I say, with great pride and satisfaction 'An Atari 8-Bit'. You should see some of the looks I receive. Some horrified-type, some sneering *'Oh, You should have brought a PC long ago'* type looks. I get even more looks when I state that I own an 8-Bit computer by choice and that I have no intention of selling up to buy a supposedly superior PC. Most think I'm mad. Smirks appear, and they go off. But I don't care. Why should I? I own an 8-Bit Atari.

IT DOES WHAT I WANT

Recently I brought a program called 'TextPro v4.56xe from Dean Garraghty's PD library. It is brilliant, a word processor with all the features you would ever need - mail merge, macros, and a brilliant mini DOS menu. I also have TEAM MATE, a good WP/Spreadsheet package. I can honestly say that, although I can use the school PC's fully, I have yet to see or use a PC WP package that is as easy to use or as user-friendly as TextPro on the Atari. Our school has just paid over £50 for Word for Windows 6 on the PC, but for my needs the best just has to be TextPro. It has all that I want plus more. At £2.00 it makes my IT teacher look like a complete idiot! My honest opinion is that Word 6 is the biggest load of rubbish I've ever seen. For DTP type jobs it is great, but for a simple WP package it has too many features. All those features - I'll never use them, just more things to go wrong!

It's the same with PCs. Our PCs at school have gone down numerous times (seven have had to be repaired in the past 6 months). All that cost! By comparison, my Atari has never ever broken down once. I can honestly say that, for the 10 years or more of its life, it has never cost me or my uncle a penny, except in electricity costs. Sometimes it hardly seems fair that my friends, being PC owners, can walk into any computer shop and buy something for their computer, whilst I have to send off for something, having sometimes never even seen a review, hoping that it will be what I want, and then find that it is about as useful to my existing computer set-up as to a tractor. Trust me to send of for DAISY DOT 2 for my 1029, reading afterwards, when the printer printed garbage, that is for Epson Compatible printer owners! Grrrrrrrr!!! It pays to read before you buy, even if you can't look (I did read somewhere about Ray Goldman's latest baby, DAISY DOT 3 - 'Now compatible for a variety of printers'. The 1029 was not listed, so I dare not send off for it.

BIG IS NOT BEAUTIFUL

Why is it that children always judge a computer by its RAM size? Whenever I state that my machine has 64k, they always go *'MINE has 254k'* or words to that effect. I've never been ashamed of the fact that my computer has less memory than its rivals, I commend the fact that perhaps the Amiga has greater sound facility (in some cases), and the PC has more memory, but the fact that ***I AM COMFORTABLE WITH MY COMPUTER*** makes no sense to them. Just because I haven't a PC, people say that my parents cannot afford one, but that simply is not the case. When my mum actually asked whether I would like to get one, I said 'No'. I once asked one of the people who were taking the mickey out of 64k memory what the term 'k' actually meant. He couldn't answer that one! It seems to me that everyone is going *'If it has a higher number, it must be better'*. Not in all cases. Take the 130XE. Twice the memory capability, but same specifications otherwise. Has anyone EVER used the extra memory of the 130XE, except for RAMdisk? Not many, I bet.

Why is it that people take the mickey out of a computer that they have never even heard of, let alone seen. They're like a bunch of ladies nattering over the garden wall - *'Look at him over there. HE's got an 8-BIT computer.'* .. *'You don't say.'* .. *'Yeah, and he's only got 64k RAM'*. You've got to laugh. Who else but Amiga and PC owners could think up such drivel? As long as you're comfortable with your setup, that's the main thing, I think.

WE ACTUALLY CARE!

For some reason or other the Atari community seems different to any other computer community. Most people who own Atari's are not out for a fast buck, they support and help others, something which I have not seen in the Amiga and PC worlds. That is probably why we have lasted so long without official support for many years and the Atari community, if it continues to be as friendly and helpful towards each other, will probably last for many more. This is probably why I feel comfortable with my Atari. I would not exchange it for the world, not for a million PC's! When my IT teacher asked me about what computer I had, and I replied that I had an Atari 8-Bit, he asked me 'Are you thinking of selling it and buying a PC in the future?'. Although I answered back 'No!', quite firmly enough (any more firmly and I would have been at his throat), it made me start thinking. I've been an Atari 8-Bit user for about 5 years, and as yet I hadn't given anything back. I'd been meaning to write something, but had never quite found the motivation in myself to put pen to paper and actually do anything. So I thought 'Let's do it', and ended up writing this article on the back pages of my school rough book. So this is MY first contribution, my way of supporting the Atari world. I hope you enjoyed it.

I would like to say a few words of thanks .... to Mr. Hagger, my IT teacher, who gave me the motivation to write the article; to MY MUM, who gave me her opinion on the article; to Eddie of Rainham, Kent, who sold me his brother-in-law's 1029 and came around time and time again when it broke down on Christmas Day and to Les and Sandy of NAU, who continue to publish the best Atari magazine ever to grace the UK.

For those who would like to write in with comments, complaints, letters of condolence etc., my address is: ***James Austin, 19 Clive Road, Sittingbourne, Kent, ME10 1PJ***

LET'S WRITE A VBI

John Foskett's in-depth tutorial tells you everything you need to know

There have been many programs published in the past and programs still being published that could benefit by the inclusion a small VBI routine. The main problem with writing a VBI routine is that it must be written in machine code and somehow converted into a form that is suitable for including in a Basic program. There are still many good programmers on the Atari Classic scene who are in awe of machine code and therefore of interrupt routines, but machine code programming needn't be so overwhelming. The fact that machine code programming cannot be done within Basic and must be done as a separate piece of programming using a different environment seems to put people off.

Unlike the Basic language, machine code routines used within Basic appear to be no more than rows of meaningless numbers or meaningless strings of random characters which just happen to work and do a useful job. Exactly how such apparently meaningless sets of DATA or strings work remains a mystery to some people who simply use such routines blindly without question. The main point is that although there is nothing wrong in using a routine that works, how much nicer it would be to write a specific VBI routine to do a specific job within a Basic program. That is what this article is all about. I will guide you through the necessary steps from the outset of deciding what functions a VBI routine needs to perform, right up to its inclusion into a Basic program either as Basic DATA or as a machine code string.

WHAT IS A VBI?

A VBI is a Vertical Blank Interrupt routine which is a routine actioned in the time period known as the "Vertical Blank" which is a feature of television convention.

WHAT'S A VERTICAL BLANK?

The time period known as the Vertical Blank is literally the period of time between the end of one frame of a television picture and the beginning of the next. A moving television picture is made up of a series of still frames displayed in rapid succession in order to create the illusion of movement. It does this by using a single electron beam forming a tiny spot on the screen to draw each still frame in a series of lines (625 in the UK) horizontally across the screen. The process employed in the convention of displaying a television picture can be visualised in a similar way to reading the page of a book and this is how it will be described.

A page of a book is read in a series of horizontal lines from left to right across the page and when one line is completed, our eyes "flyback" to begin the next line which is one line lower than the previous line. In television convention, this flyback is know as the line or horizontal flyback and because it is blanked out (that is switched off) by the televisions electronics to prevent it from ruining the picture, this flyback is known as the horizontal blank period.

When reading, we slowly progress down the page until we reach the final line upon the completion of which we "turn the page" to begin another page. But if we imagine that we are going to read the same page again, then our eyes must do a different type of flyback rather than the previously stated horizontal flyback. In this case our eyes must go back to the start of the page with a kind of diagonal movement. This flyback is known as a frame or vertical flyback in television convention and again because it is blanked out, it is known as the "Vertical Blank".

Because in television convention, there are 25 still frames (or pictures) each scanned twice with interlaced scanning every second, it is clear that there are 50 "Vertical Blank" periods every second which is why a VBI routine is actioned 50 times per second.

WHY USE A VBI?

The advantage of using even a small VBI routine is that it works completely independently of Basic and so a Basic program which includes a VBI routine could be visualised as two programs working together, yet independently of each other. Although a VBI routine runs independently of Basic, the routine can be controlled by the Basic program via the use of flag registers. Since a VBI routine is actioned 50 times per second along with the computers own internal routines, there are many functions that it could perform within a Basic program.

WHY BOTHER IF BASIC CAN DO IT?

The truth is that Basic can't always do it and if Basic can, it may involve a great deal of unnecessary programming. Consider for example the disabling of the attract mode in a Basic program, we would need to use POKE 77,0 at strategic places in our program, perhaps in many different places. How much nicer it would be to include this in a VBI routine which is then actioned 50 times every second ensuring that the attract mode can never be activated. We could then simply forget it.

Disabling the BREAK key is also a good example of the advantage of using a VBI routine. If this is achieved in Basic and the program changes the screen mode then the BREAK key is automatically re-enabled which then has to be again disabled. If this is performed within a VBI routine, then it is continually being actioned 50 times per second so that even if a Basic program does change the screen mode, the VBI routine will automatically take care of it and again we can simply forget it.

A CHOICE OF TWO

Whenever switched on, the computer is using VBI routines of its own in order to perform its general housekeeping tasks, therefore whenever we write VBI routines, we are only adding to those already there. Bearing this in mind, references are made in this article, to the VBI routines as a whole and not just to our specially written VBI routine.

Within the computer are two built-in VBI routines which can be visualised as being completely independent of each other. The first is the stage 1 or immediate VBI and the other is the stage 2 or deferred VBI. Access to both routines is provided via the use of vector addresses which in effect allow us to break into the respective loop. The actual vector addresses are found at locations 546 and 547 (VVBLKI) for an immediate VBI routine and 548 and 549 (VVBLKD) for a deferred VBI routine. These two pairs of locations contain the address in the usual Atari two byte format.

WHICH VBI SHOULD WE USE?

The difference between the two routines is that the deferred VBI routine is suspended (or stopped) occasionally to allow the computer to action some time critical operations when necessary.

Because of timing constraints, an immediate VBI routine must remain relatively small, containing no more than about 3800 machine cycles whilst a deferred VBI routine can be a lot larger having about 20,000. Because of this requirement and the fact that the vast majority of custom written VBI routines have no time critical operations, they are normally written as deferred VBI routines.

TAPPING INTO THE ROUTINES

As stated above, both the immediate and the deferred VBI routines have vector addresses which can be altered to accommodate a custom written routine. The way that a custom written routine is inserted into the "loop" is to load the address of our VBI routine into the appropriate vector address and let our routine jump to the address that was originally contained within the vector. This means that the vector address points to our VBI routine rather than the original address and our routine points to the original address instead. In this way, the computer will action our routine just as if it were an extension of its own routines.

One very important point to remember is that the computer is using both these addresses all the time, so great care is necessary when altering them if a crash is to be avoided. This means that these addresses are being used by the computer even during the initialising of a Basic program, so if the computer was reading them at the precise moment that our Basic program was changing them, then the computer will crash. In order to avoid this conflict, all VBI operations should be temporarily suspended during the change-over period. This is achieved by POKEing the "Non-Maskable Interrupt ENable" (NMIEN) register at location 54286 with zero prior to changing the vector addresses, after which NMIEN is reset to re-enable the VBI operations.

A custom written VBI routine must have been previously set up prior to changing the vector address or again the computer will crash since the vector will contain, at that precise moment, a nonexistent address. The point to remember is that these vectors must always point to a legal address or the computer will crash.

THE FEATURES OF OUR VBI

It is always important to disable the attract mode and the BREAK key.

Another feature that effects the screen display which is very difficult to contain in Basic but dead easy in a VBI is the CONTROL-1 stop-start toggle. When used, this feature inhibits all screen printing and can therefore stop a program from working properly. It is important that this is disabled.

Because it is often necessary to ensure that only the uppercase characters can be used, such as in an input routine, we shall provide a "keyboard lock" to disable the lower case character set and all inverse characters. Sometimes however, all the characters are required so this feature must be optional. When enabled, the keyboard lock will completely disable the CAPS and the inverse keys.

Many types of game programs require a timer of some kind and although the real time clock at locations 18/19/20 is available, we shall include two individual timers, one count up timer and one count down timer. Both timers will increment in one second intervals and will count 256 seconds after which they will reset. This will allow for time periods in excess of 4 minutes.

Because many users prefer to be able to alter the screen colour in order to suit their own preferences, we shall provide a means of cycling through all the colours in sequence. This will be achieved via use of the START key and SELECT will be used to reset the screen colour back to the normal blue.

Our VBI routine will be written as a deferred VBI routine and to summarise, it will provide the following ....

1. Disable the attract mode
2. Disable the CONTROL-1 stop-start toggle
3. Disable the BREAK key
4. Provide an optional keyboard lock
5. Provide two timers, one count up and one count down
6. Provide a means of altering the screen colours

WHICH REGISTERS FOR INTERFACING?

In order for our VBI routine to work, we need to reserve some registers for it to use. There are a group of unused registers in page zero which our VBI could use, they are locations 203 to 209. We will only need five of these seven registers which will be locations 203 to 207. They will be allocated as follows ....

203: Controls the keyboard lock, when it contains a zero, the keyboard lock will be enabled, but disabled when it contains a non-zero value
204: Count up timer. Read by PEEK
205: Count down timer. Read by PEEK
206: Divide by 50 control (not usable)
207: Colour cycling speed control (not usable)

ASSEMBLER AND TEXT EDITOR

Before the actual source code can be written, an assembler and text editor programs are required. Writing in Assembly Language is a two stage process where the text editor, which is basically a word processor, is first used to write the source code in exactly the same way as one would write a letter using a word processor, after which the assembler is used to assemble the source code. The code that the assembler produces from the source code

is known as the object code and will be our VBI routine in machine code form, but it cannot be used as it stands. The next process to be performed is to convert the object code into a form that can be included in a Basic program and many utility programs have been written over the years which do this. The output file from the utility program will be our VBI routine in Basic.

It is possible to write machine code routines directly into Basic DATA by looking up the various codes and calculating the various addresses where necessary into the usual Atari two byte format, but this is very time consuming and error prone and should only be considered for the simplest of routines and then only with much experience.

THE SOURCE CODE

Type the source code listing **SOURCE 1**, which is our VBI routine, into a text editor in accordance with the text editor's instructions. Everything that follows a semi-colon, including the semi-colon itself may be left out since this is the equivalent of Basic's REM command.

THE SOURCE CODE EXPLAINED

The first instruction in the source code listing is PHA (PusH Accumulator). This instruction is used to store the contents of the accumulator on the stack for retrieval later. This is done because our VBI is an interrupt routine which will, in effect, be borrowing the processor for a short time after which the processor must continue as if it had not been interrupted. Therefore after our VBI routine has finished with the processor, the processor must

```
;-----------------
;LET'S WRITE A VBI
; THE SOURCE CODE
;-----------------
 PHA
;
;Disable ATTRACT and CONTROL-1
 LDA #0
 STA 77
 STA 767
;
;Disable the BREAK key
 LDA #64
 STA 16
 STA 53774
;
;Update Timers
 INC 206
 LDA 206
 CMP #50
 BNE CLOCK
 LDA #0
 STA 206
 INC 204
 DEC 205
CLOCK
;
;Keyboard Lock
 LDA 203
 BNE KEYLOCK
 STA 694
 LDA #64
 STA 702
KEYLOCK
;
;Reset Screen Colours
 LDA 53279
 CMP #5
 BNE RESETCOL
 LDA #148
 STA 710
RESETCOL
;
;Cycle Screen Colours
 LDA 53279
 CMP #6
 BNE CYCLECOL
 INC 207
 LDA 207
 CMP #5
 BNE CYCLECOL
 LDA #0
 STA 207
 INC 710
CYCLECOL
;
;Jump to Address
 PLA
 JMP 49802
```

Source code listing - SOURCE 1

be restored to exactly the same status as it was previously to allow it to continue. Since our VBI routine is only using the accumulator, there will be no need to store the contents of the X and Y registers as these will not be changed.

Disabling the attract mode and the CONTROL-1 stop-start toggle is achieved with the equivalent of POKE 77,0 and POKE 767,0 which is ...

```
LDA #0    (LoaD Accumulator with the
           number 0)
STA 77    (STore the Accumulator contents
           in location 77)
STA 767
```

Disabling the BREAK key is achieved by using the equivalent of POKE 16,64 and POKE 53774,64 which is ....

```
LDA #64
STA 16
STA 53774
```

Updating the timing registers with the required one second intervals is achieved by using another register (206) to count 50 VBI operations before allowing the timers to be updated once, in effect dividing by 50. Since there are 50 VBI operations every second, the result is one second intervals. The section of code that does this is ...

```
INC 206     (INCrement 206 by 1)
LDA 206     (LoaD Accumulator with the
             contents of location 206)
CMP #50     (CoMPare accumulator with
             the number 50)
BNE CLOCK   (Branch if Not Equal to zero to
             label CLOCK)
LDA #0
STA 206
INC 204
DEC 205     (DECrement location 205)
CLOCK       (Address of label CLOCK)
```

This works by incrementing location 206 by one at every VBI and loading its contents into the accumulator where it is compared with the number 50 and if not equal to 50, then the updating part of the code is bypassed. To show the way that this piece of code works, consider the Basic comparison below where the only difference is that, in assembly language, when a location is incremented past 255, unlike Basic it simply returns to zero.

```
10 POKE 206,PEEK(206)+1
20 IF PEEK(206)<>50 THEN 60
30 POKE 206,0
40 POKE 204,PEEK(204)+1
50 POKE 205,PEEK(205)-1
60 <Next section>
```

When location 203 contains a zero, the keyboard lock is enabled and if a zero is not found, then the key disabling code is bypassed, thus ....

```
LDA 203
BNE
KEYLOCK
STA 694     (INVFLG, Inverse flag register)
LDA #64
STA 702     (SHFLOK, Shift lock register)
KEYLOCK
```

As an example of how this section of code works, consider the following Basic example (line numbers continue from the previous example)....

```
60 IF PEEK(203)<>0 THEN 90
70 POKE 694,0
80 POKE 702,64
90 <Next section>
```

Cycling and resetting the screen colours is achieved by detecting the START and SELECT keys and manipulating the colour register 710 accordingly, thus ....

```
LDA 53279
CMP #5
BNE RESETCOL
LDA #148
STA 710
RESETCOL
```

```
LDA 53279
CMP #6
BNE CYCLECOL
INC 207
LDA 207
CMP #5
BNE CYCLECOL
LDA #0
STA 207
INC 710
CYCLECOL
```

The screen colour cycling speed is regulated by the instruction CMP #5 which follows LDA 207. To slow the cycling, increase the number and to speed it up, lower the number. This piece of code is best compared with Basic as before and again note that after a register is incremented past 255, it resets to zero (line numbers continue from the previous example)

```
90 IF PEEK(53279)<>5 THEN 110
100 POKE 710,148
110 IF PEEK(53279)<>6 THEN 160
120 POKE 207,PEEK(207)+1
130 IF PEEK(207)<>5 THEN 160
140 POKE 207,0
150 POKE 710,PEEK(710)+1
160 <Next section>
```

Exiting a VBI routine is achieved by jumping to an address via a JMP (JuMP) instruction after retrieving the original accumulator contents from the stack via PLA (PuLl Accumulator) which is the opposite of PHA as used at the top of the listing.

OUR VBI IN USE

Whichever assembler and text editor program you have used our VBI routine, once in the form of Basic DATA, should appear exactly the same as the DATA in lines 350 to 370 of the Basic listing **VBI.BAS**. Line 310 of the program loads the DATA into page 6 and line

```
EN 310 DIM VBI$(81):VBI$="H[illegible]"
A5 320 ADDRESS=ADR(VBI$):HI=INT(ADDRESS/2
   56):LO=ADDRESS-HI*256
XI 330 POKE 54286,0:POKE 548,LO:POKE 549,
   HI:POKE 54286,64:RETURN
```

VBI.STR - see text below

330 sets up the vector address. Note that the NMIEN register at location 54286 is POKEd with a zero prior to altering the vector address in order to suspend VBI operations during the change over period and then reset afterwards. The listing is an example program to demonstrate that our VBI routine is working. Follow the on screen instructions in order to check it.

Another way that our VBI routine could be stored is in the form of a machine code string. Delete lines 310 to 370 from the **VBI.BAS** program (after saving it of course) and then add the lines shown in the listing **VBI.STR**. Note that the address of the string is found using ADR(VBIS).

From running the amended listing, the advantage of a directly defined machine code string is obvious - virtually no initialising time because there is no time consuming DATA to load. However if something is typed which results in an error then a crash is likely. When compared with the original listing, the amended listing can be seen to be far more sensitive to error and prone to crashing. For this reason, it may be a good idea to include a VBI routine in a program in the form of Basic DATA while the program is being developed and then change it into a machine code string upon completion. Another disadvantage of using machine code strings is the difficulty involved in typing them in, they are inevitably full of awkward control characters which makes them extremely error prone.


```
BK 10 REM ┌──────────────────────┐
QD 20 REM |   LET'S WRITE A VBI   |
AH 30 REM |Written by John Foskett|
XO 40 REM |    February 1995      |
VK 50 REM ├──────────────────────┤
CJ 60 REM |EXAMPLE PROGRAM TO TEST|
MH 70 REM |   OUR VBI ROUTINE     |
BZ 80 REM └──────────────────────┘
IL 90 GRAPHICS 0:DIM SPACE$(37):SPACE$="
   ":SPACE$(37)=" ":SPACE$(2)=SPACE$
BK 100 POKE 752,1:? "EXAMPLE PROGRAM FOR
   TESTING OUR VBI":? :? "INITIALISING.."
FA 110 REM Check Timers
TS 120 GOSUB 310:POSITION 2,2:? "OUR VBI
   ROUTINE IS NOW RUNNING"
DW 130 ? :? :? :? "COUNT UP TIMER  : PEEK
   (204)=":? :? "COUNT DOWN TIMER: PEEK(2
   05)="
BV 140 ? :? :? :? "PRESS START TO CYCLE
    SCREEN COLOURS":? :? "PRESS SELECT
   TO RESET COLOUR"
DI 150 ? :? "PRESS OPTION TO EXIT"
MZ 160 POKE 204,0:POKE 205,0
WI 170 POSITION 30,6:? PEEK(204);"  "
YU 180 POSITION 30,8:? PEEK(205);"  "
BN 190 IF PEEK(53279)=3 THEN 220
OG 200 GOTO 170
CD 210 REM Exit to Basic
QK 220 FOR I=6 TO 16:POSITION 2,I:? SPACE
   $:NEXT I:POKE 752,0:POKE 203,0:POKE 76
   4,255
QU 230 POSITION 2,5:? "TRY ENTERING LOWER
    CASE AND INVERSE   CHARACTERS AND THE
   N POKE 203,1 AND    TRY AGAIN...."
UG 240 ? :? "TRY LISTING THE PROGRAM AND
   PRESSING  THE BREAK KEY AND ALSO TRY C
   ONTROL-1  TO STOP THE LISTING...."
NT 250 ? :? "TRY PRESSING START TO CYCL
   E THROUGH THE SCREEN COLOURS AT THE SA
   ME TIME"
NU 260 ? "AS TYPING OR LISTING THE PROGRA
   M...."
LM 270 ? :? "TRY TYPING 'GRAPHICS 0' AND
   PRESSING  THE BREAK KEY...."
OH 280 END
YS 300 REM Our VBI Routine
XM 310 RESTORE 350:FOR I=0 TO 80:READ D:P
   OKE 1536+I,D:NEXT I
ES 320 REM Set-Up
FF 330 POKE 54286,0:POKE 548,0:POKE 549,6
   :POKE 54286,64:RETURN
RY 340 REM Data
RM 350 DATA 72,169,0,133,77,141,255,2,169
   ,64,133,16,141,14,210,230,206,165,206,
   201,50,208,8,169,0,133,206,230,204
HR 360 DATA 198,205,165,203,208,8,141,182
   ,2,169,64,141,198,2,173,31,208,201,5,2
   08,5,169,148,141,198,2,173,31,208
RB 370 DATA 201,6,208,15,230,207,165,207,
   201,5,208,7,169,0,133,207,238,198,2,10
   4,76,138,194
```

VBI.BAS -the routines in action

SWAPPING OVER

If it is thought necessary to use a deferred VBI routine as an immediate VBI routine (or vice versa) then it is simply a matter of altering the VBI routine's final address and use the "other" vector address. Changing the deferred VBI in the Basic program above into an immediate VBI routine is achieved by altering the last two statements in the DATA which are to be found on line 370 and by using the other vector address in line 330.

If the locations 548 and 549 are PEEKed in direct mode, then it can be seen that they are the same as the last two DATA statements in

LET'S WRITE A VBI continued

the listing above, that is 138 and 194 respectively. These two DATA statements must be the same as the values stored in locations 546 and 547 instead and so must be changed to 226 and 192 respectively. This change must also be reflected in line 330 in the above listing by using POKE 546,0 and POKE 547,6 instead of the present vector address.

NOW THERE ARE NO EXCUSES!

A whole new world of programming has just opened up which is as usual only limited by one's imagination. There is no excuses now for not making great use of VBI routines. The possibilities are endless, so get yourself an assembler.

MY ASSEMBLER

I wrote an assembler program some time ago which is ideal for use with this article. My assembler writes its output files directly in Basic DATA bypassing the need for converting the normal object code. My assembler, known as the "Turbo Assembler", is very easy to use and uses a word processor as a text editor (I use TextPro V1.2). My Turbo Assembler is ideal for beginners in machine code and assembly language and it may be the only assembler you ever need.

To obtain a copy of my Turbo Assembler, write to ....

Mr. John Foskett
26 Auckland Road
Kingston-upon-Thames
Surrey KT1 3BG (England)

CONTRIBUTIONS

YOUR contributions are the lifeblood of New Atari User

All of your contributions are welcome but at the moment we need more

GAMES LISTINGS

BONUS PROGRAMS

However don't stop sending in other articles and programs. If something interests you, you can be sure it will interest someone else so write it up and send it in - NOW!

HOW DO THEY DO THAT?

From Leslie Benson comes the following

" Your suggestion of a 'How do they do that' column is quite interesting and I think you may have inadvertently started this off on the Issue 69 disk when you asked how to get NODOS to work from DOS. The solution is to add the run address $1F00 at the end of the file. I used a sector editor, but a safer way would be to transfer the file to a new disk with the same filename but without write protection, then type in and run the following program:

```
10 OPEN #1,9,0, "D:NDOSCONV.COM"
20 PUT #1,224:PUT #1,2
30 PUT #1,225:PUT #1,2
40 PUT #1,0:PUT #1,31:CLOSE #1
```

The program should then work without trouble. All files with the COM extender will be shown in the menu. Incidentally NDOSCONV will run with SpartaDOS without the added run address

N.C. Williamson supplied a solution in Basic for the YN keys which we may feature if this column gets going but also asked "What action do you need to take to be able to call up and use the extra 64k RAM on a 130XE or an extended 256k machine?"

That looks like an article in itself! Anyone care to have a go?

Let's see if we can get this column going. Send some questions to us at the usual address - just put HOW DO THEY DO THAT on the top of your letter to make sure it doesn't get lost in Allan Palmer's bulging mailsack.

PLASMA

Andy Guillaume presents an abstract pattern creator usually found on the PC but his time in Turbo Basic for the Atari Classic

This program creates an effect commonly seen on the PC of a gas or plasma cloud, although they can be interpreted as mountain ranges, starfields or geographic maps depending on the colours! The effect is created by plotting a series of dots of different colours and shading in between them using the other available colours. The program allows you to alter X and Y grid steps, colours used, random seed values, graphics modes and draw type to create many effects. In Graphics 9 (16 shades) you get a sort of marbled or textured surface and can colour cycle in many different styles in Graphics 10, 7 and 15.

MENU CONTROL

From the menu use the following keys:

D- Draw plasma cloud of current Type using set parameters. Press any key to quit drawing and return to the menu

V- View picture. Any key for menu

L - Load picture. Gives current disk directory with the selected filename extender (see below). Enter filename or press Return for menu. Format is a straight 62 (31 for Graphics 7) sector file dump from the screen display

S- Save picture. Enter filename or Return for menu

F- Filename extender. Enter name to use as the filename extender for Load and Save operations

G- Set graphics mode. At each press the Graphics mode number will cycle through 10, 11, 15, 7, 9 then 10 again. Grapphics mode info is also displayed

X-Increase X step(XS). Max value is screen width

CNTRL-X- Decrease XS. Min value is 2

Y- Increase Y step(YS). Max value is screen depth

CNTRL-Y- Decrease YS. Min value is 2

E- Set random seed value(RS). This is used in the draw routine, it's use depending on the current draw type (see below). Enter the required value and press Return. Illegal values will be ignored

T- Draw type. At each press the draw type cycles through:

*1 **Random*** - Draws grid of dots using XS and YS with RS as a seed for the random colour selection

*2 **Skip Up*** - Draws grid using XS and YS with RS as the number of colour registers to skip up through per dot

*3 **Skip Dn*** - Same as Skip up but goes down registers

*4 **Up/Down*** - Same as type 2 and 3 but goes up until maximum register is reached then down until minimum then up again

*5 **Scatter*** - Plots RS amount of randomly coloured dots using XS and YS as grid width and height

*6 **Shader*** - This mode takes an existing screen (i.e. load one in!), and shades in between dots on the XS and YS grid

*7 **Checked*** - The same as type 1 but in this mode each block of four dots (on the XS, YS grid) is checked to give four different colours if possible

C- Colour cycle (if available). While in colour cycling mode, the following keys change the display:

Spacebar - Reverse cycle direction

<- Speed up

> - Slow down

Inverse key - Reverse colour flow direction

Return - Pause cycling. Any key to resume

Escape - Return to menu

+ - Decrease cycling seed number

* - Increase cycling seed number

CLR/SET/TAB - Toggle Glow mode

L - Loop colour while in glow mode Note: Only plotted foreground colours are cycled, not background

R- Register edit

The colour register used in draw mode is taken from the available plot list. For each register available you can assign the number of the actual colour register to be plotted. The maximum and minimum colours to be used can thus be set, but colours in between will still be used to shade the effect. The available Plot registers are shown on the left, with their assigned colour register numbers on the right. On bootup or when the graphics mode is changed these will be the same, i.e. all colour registers active. Use the following keys to edit the list:

M - Return to main menu

R - Reset to default

-/= - Decrease/Increase number of registers used

E - Edit list. A prompt will appear for each available plot register. Enter the new value and press Return, or just press Return to keep the old value. Min 0, Max <number of regs.>

AN EXAMPLE RUN

Say you want a Graphics 10 plasma, on a 4 by 4 grid using colour registers 1-7, (not background) of Checked type then proceed as follows

1 - Use G to select mode 10
2 - Press R for register edit
3 - Decrease number of registers used by pressing - (minus)
4 - Press E to edit. Set values from 1 to 7 for each respective available register
5 - Press M to return to the menu
6 - Set XS and YS using X and Y keys
7 - Press T until Checked mode is on
8 - Press E to set random seed and type in the required value
9 - Press D to draw!
10 - After drawing, press C to colour cycle and see that it's much better without the black bits of background in the drawing

☞

```
IL 1 REM ##############################
VP 2 REM #  PLASMA by A. Guillaume    #
YK 3 REM # NEW ATARI USER - APRIL 95 #
IO 4 REM ##############################
AY 10 REM
KZ 20 TRAP 2830
PQ 30 DIM E$(4),F$(20),D$(20),RU(15),ST$(
   8),TY$(56)
VE 40 TY$(%1,56)="Random  Skip Up Skip Dn
   Up/Down Scatter Shader  Checked "
US 50 SCR=33334:CUR=752
DM 60 GSP=%2:EXEC GRSELECT
PP 70 XC=3:YC=6:RS=%1
KN 80 ST=%1:ST$(%1,8)=TY$(%1,8)
KM 90 GRAPHICS %0:SETCOLOR %1,%0,10:SETCO
   LOR %2,%3,%0:SETCOLOR 4,%3,%0
OP 100 POKE 82,%0:POKE CUR,%1
YE 110 POSITION 8,%1:? " Plasma Cloud Gen
   erator "
PB 120 EXEC BRKTRP
VN 130 POSITION 9,4:? "Draw         View"
SX 140 POSITION 9,6:? "Load         Save"
PI 150 POSITION 9,8:? "Filename ext>(";E$
   ;")";"         "
SI 160 POSITION 9,10:? "Reg edit    Seed
   :";RS;"     "
RO 170 IF (GSP=%1 OR GSP=%3 OR GSP=5) THE
   N POSITION 9,12:? "Cycle":GOTO 190
BW 180 POSITION 9,12:? "     "
BE 190 POSITION 21,12:? "Type   :";ST$
VC 200 A=GRM:IF A>15 THEN A=A-16
CM 210 POSITION 9,14:? "GR.Mode:";A;" "
QT 220 POSITION 21,14:? "X pixs :";MID+%1
   ;" "
FU 230 POSITION 9,16:? "Colours:";COLS+%1
   ;" "
BQ 240 POSITION 21,16:? "Y pixs :";HEI+%1
   ;" "
LR 250 POSITION 9,18:? "X Step :";XC;"  "
TB 260 POSITION 21,18:? "Y Step :";YC;"
   "
AM 270 POSITION 10,20:? "(CNTRL X & Y TO
   DEC)"
XG 280 GET A
TR 290 IF A=68 THEN EXEC PLASMA:GOTO 90
WH 300 IF A=86 THEN EXEC VIEW:GOTO 90
PA 310 IF A=67 AND (GSP=%1 OR GSP=%3 OR G
   SP=5) THEN EXEC CYCLE:GOTO 90
UP 320 IF A=88 THEN XC=XC+%1
QP 330 IF XC>MID THEN XC=%2
XR 340 IF A=89 THEN YC=YC+%1
MD 350 IF YC>HEI THEN YC=%2
TR 360 IF A=24 THEN XC=XC-%1
XY 370 IF XC=%1 THEN XC=MID
VT 380 IF A=25 THEN YC=YC-%1
NN 390 IF YC=%1 THEN YC=HEI
OO 400 IF A=76 THEN EXEC LLD:GOTO 110
AK 410 IF A=83 THEN EXEC SSD:GOTO 110
OZ 420 IF A=82 THEN EXEC REGED:GOTO 110
FA 430 IF A=71 THEN EXEC GRSELECT
DQ 440 IF A=69 THEN EXEC CHSD:GOTO 110
MS 450 IF A=70 THEN EXEC FEED:GOTO 110
FH 460 IF A=84 THEN EXEC TYPE:GOTO 110
OW 470 GOTO 170
JJ 480 PROC VIEW
MR 490 EXEC SETGRM
VO 500 MOVE SCR,SCN,SCLEN
WV 510 GET A
VR 520 ENDPROC
PR 530 PROC SETGRM
WT 540 CL=8*16:LUM=%0
VW 550 GRAPHICS GRM
PN 560 EXEC BRKTRP
DI 570 IF GSP=%3 THEN FOR N=705 TO 712:PO
   KE N,CL+LUM:LUM=LUM+%2:NEXT N
GU 580 IF GSP=4 THEN SETCOLOR 4,%0,10
IU 590 IF GSP=%2 THEN SETCOLOR 4,%0,%0
HT 600 IF GSP=%1 OR GSP=5 THEN POKE 708,C
   L+8:POKE 709,CL+10:POKE 710,CL+12
IN 610 SCN=DPEEK(88):P=DPEEK(560)
VS 620 ENDPROC
UE 630 PROC SSD
WD 640 CLS :POSITION 10,%0:? " Save Pictu
   re "
ZB 650 EXEC FILES:IF NFF=%1 THEN 690
GT 660 OPEN #%1,8,%0,F$
GR 670 BPUT #%1,SCR,SCLEN
ER 680 CLOSE #%1
RS 690 CLS
VP 700 ENDPROC
OK 710 PROC LLD
EC 720 CLS :POSITION 10,%0:? " Load Pictu
   re "
XR 730 EXEC FILES:IF NFF=%1 THEN 770
EM 740 OPEN #%1,4,%0,F$
AE 750 BGET #%1,SCR,SCLEN
EO 760 CLOSE #%1
RP 770 CLS
WF 780 ENDPROC
ZY 790 PROC GRSELECT
KN 800 GSP=GSP+%1
NO 810 IF GSP>5 THEN GSP=%1
OV 820 IF GSP=%1 THEN GRM=23:COLS=3:MID=1
   59:HEI=95:SCLEN=3840:E$=".GR7"
QW 830 IF GSP=%2 THEN GRM=9:COLS=15:MID=7
   9:HEI=191:SCLEN=7680:E$=".FLP"
QO 840 IF GSP=%3 THEN GRM=10:COLS=7:MID=7
   9:HEI=191:SCLEN=7680:E$=".FLP"
JP 850 IF GSP=4 THEN GRM=11:COLS=15:MID=7
   9:HEI=191:SCLEN=7680:E$=".FLP"
WK 860 IF GSP=5 THEN GRM=31:COLS=3:MID=15
   9:HEI=191:SCLEN=7680:E$=".G15"
RY 870 IF XC>MID THEN XC=MID
BG 880 IF YC>HEI THEN YC=HEI
TL 890 IF RS>COLS THEN RS=%1
IZ 900 FOR N=%0 TO COLS:RU(N)=N:NEXT N:NR
   U=COLS
VT 910 ENDPROC
IK 920 PROC REGED
RJ 930 CLS
OU 940 POSITION 11,%0:? "Plot"
RF 950 POSITION 20,%0:? "Register"
XC 960 FOR N=%0 TO NRU
UX 970 POSITION 12,%2+N:? N
MR 980 POSITION 23,%2+N:? RU(N)
IP 990 NEXT N
QX 1000 POSITION %2,20:? "-/= Dec/Inc   E
   dit   Reset   Menu"
RR 1010 GET A
WU 1020 IF A=77 THEN 1180
CA 1030 IF A=82 THEN FOR N=%0 TO COLS:RU(
   N)=N:NEXT N:NRU=COLS:GOTO 930
RY 1040 IF A=45 AND NRU>%1 THEN POSITION
   12,%2+NRU:? "  ":POSITION 23,%2+NRU:?
   "  ":NRU=NRU-%1
VN 1050 IF A=61 AND NRU<COLS THEN NRU=NRU
   +%1:POSITION 12,%2+NRU:? NRU:POSITION
   23,%2+NRU:? RU(NRU)
RA 1060 IF A<>69 THEN 1010
QQ 1070 FOR N=%0 TO NRU
BC 1080 POSITION 26,%2+N
VW 1090 POKE CUR,%0
EU 1100 INPUT F$
VQ 1110 POKE CUR,%1
HT 1120 IF F$="" THEN A=RU(N):GOTO 1150
QA 1130 A=VAL(F$)
FW 1140 IF A<%0 OR A>COLS THEN 1080
ZZ 1150 RU(N)=A:POSITION 23,%2+N:? A;"
   "
HM 1160 NEXT N
NY 1170 GOTO 1010
JD 1180 CLS
ZF 1190 ENDPROC
EW 1200 PROC CHSD
NY 1210 POSITION 33,10
VF 1220 POKE CUR,%0
FF 1230 INPUT F$
WB 1240 POKE CUR,%1
WU 1250 IF F$="" THEN 1290
QL 1260 A=VAL(F$)
NV 1270 IF A<%1 OR A>255 THEN 1210
EN 1280 RS=A
ZH 1290 ENDPROC
XV 1300 PROC FEED
HY 1310 POSITION 30,8
VH 1320 POKE CUR,%0
FH 1330 INPUT F$
WD 1340 POKE CUR,%1
XR 1350 IF F$="" THEN 1390
ZJ 1360 L=LEN(F$):IF L=%0 OR L>%3 THEN 13
   10
QY 1370 E$="."
PM 1380 E$(%2,%1+L)=F$(%1,L)
ZJ 1390 ENDPROC
TC 1400 PROC TYPE
KB 1410 ST=ST+%1:IF ST>7 THEN ST=%1
NV 1420 L=(ST*8)-7:ST$(%1,8)=TY$(L,L+7)
```

```
YT 1430 ENDPROC
KK 1440 PROC TYP4
CN 1450 A=A+RS
RR 1460 B=A MOD NUMCL
JX 1470 IF B=%0 OR B=NRU THEN RS=-RS:GOTO 1450
ZI 1480 ENDPROC
LN 1490 PROC TYP5
PV 1500 X=INT(WID/XC):Y=INT(HEI/YC)
GL 1510 FOR N=%0 TO RS
PL 1520 SA=RAND(X)*XC:CD=RAND(Y)*YC
IH 1530 A=RAND(257-RS):B=A MOD NUMCL
FD 1540 COLOR RU(B):PLOT SA,CD
HR 1550 NEXT N
ZE 1560 ENDPROC
ML 1570 PROC TYP7
IW 1580 A=RAND(257-RS):B=A MOD NUMCL
CM 1590 SA=RU(B)
MG 1600 CD=-%1:IF X>%0 THEN LOCATE X-XC,Y,CD
MH 1610 PPP=-%1:IF Y>%0 THEN LOCATE X,Y-YC,PPP
US 1620 L=-%1:IF X>%0 AND Y>%0 THEN LOCATE X-XC,Y-YC,L
TU 1630 IF SA=CD OR SA=PPP OR SA=L THEN 1580
ZA 1640 ENDPROC
SP 1650 PROC PLASMA
GV 1660 POKE 764,255
AE 1670 EXEC SETGRM
HG 1680 NUMCL=NRU+%1
HP 1690 A=%0
QQ 1700 IF ST=5 THEN EXEC TYP5:GOTO 1830
SH 1710 IF ST=6 THEN MOVE SCR,SCN,SCLEN:GOTO 1830
TO 1720 FOR X=%0 TO WID STEP XC
LQ 1730 FOR Y=%0 TO HEI STEP YC
AI 1740 IF ST=%1 THEN A=RAND(257-RS):B=A MOD NUMCL
TP 1750 IF ST=%2 THEN A=A+RS:B=A MOD NUMCL
CZ 1760 IF ST=%3 THEN A=A+RS:B=NUMCL-(A MOD NUMCL)
UT 1770 IF ST=4 THEN EXEC TYP4
ZJ 1780 IF ST=7 THEN EXEC TYP7
AO 1790 COLOR RU(B):PLOT X,Y
RE 1800 IF PEEK(764)<>255 THEN POP :GOTO 2120
MC 1810 NEXT Y
LU 1820 NEXT X
RO 1830 FOR X=%0 TO WID-XC STEP XC
KP 1840 FOR Y=%0 TO HEI-YC STEP YC
XJ 1850 LOCATE X,Y,P1C
AM 1860 LOCATE X+XC,Y,P2C
BY 1870 LOCATE X,Y+YC,P3C
CJ 1880 LOCATE X+XC,Y+YC,P4C
PO 1890 XC1=(P2C-P1C)/XC
RB 1900 XC2=(P4C-P3C)/XC
SN 1910 FOR X2=%0 TO XC
KY 1920 IF ST=6 THEN LOCATE (X+X2),Y,PP:IF PP<>%0 THEN 1940
HP 1930 COLOR P1C:PLOT X+X2,Y
VE 1940 IF ST=6 THEN LOCATE (X+X2),(Y+YC),PP:IF PP<>%0 THEN 1960
QB 1950 COLOR P3C:PLOT X+X2,Y+YC
QJ 1960 P1C=P1C+XC1:P3C=P3C+XC2
JN 1970 NEXT X2
TI 1980 FOR X2=%0 TO XC
GC 1990 LOCATE X+X2,Y,P1C:LOCATE X+X2,Y+YC,P3C
PK 2000 YC1=(P3C-P1C)/YC
SZ 2010 FOR Y2=%0 TO YC
QV 2020 IF PEEK(764)<>255 THEN POP :GOTO 2120
VC 2030 COLOR P1C
DN 2040 LOCATE (X+X2),(Y+Y2),PP
YF 2050 IF PP<>%0 THEN 2070
WL 2060 PLOT X+X2,Y+Y2
HO 2070 P1C=P1C+YC1
JK 2080 NEXT Y2
JC 2090 NEXT X2
LM 2100 NEXT Y
LE 2110 NEXT X
BP 2120 MOVE SCN,SCR,SCLEN
GD 2130 POKE 764,255
KC 2140 RS=ABS(RS)
YU 2150 ENDPROC
XM 2160 PROC CYCLE
ZV 2170 EXEC SETGRM
HX 2180 FOR N=704 TO 712:POKE N,%0:NEXT N
BU 2190 MOVE SCR,SCN,SCLEN
SU 2200 S=144:PPP=%3:CD=%1:STP=%0:SA=%2:CM=%1:SS=SA:LLP=%1
FZ 2210 POKE 764,255
SL 2220 IF PEEK(764)<>255 THEN STP=%0
GN 2230 IF STP=%1 THEN 2220
GI 2240 POKE 764,255
NL 2250 S=S+SA:POKE 77,%0
TS 2260 ALT=%0:IF (S MOD 16=%0) AND CM=-%1 THEN ALT=%1:SA=-SA:S=S+SA
IY 2270 IF (SA>%0 AND ALT=%1) AND LLP=%1 THEN S=S+14
MU 2280 IF S>255 THEN S=S-256
HN 2290 IF S<%0 THEN S=S+256
CJ 2300 IF GSP=%3 AND CD=%1 THEN -MOVE 705,706,7:POKE 705,S:GOTO 2340
BS 2310 IF GSP=%3 AND CD=-%1 THEN MOVE 706,705,7:POKE 712,S:GOTO 2340
QE 2320 IF CD=-%1 THEN MOVE 709,708,2:POKE 710,S:GOTO 2340
QH 2330 -MOVE 708,709,%2:POKE 708,S
QI 2340 PAUSE PPP
WL 2350 IF PEEK(764)<>255 THEN 2370
RJ 2360 GOTO 2250
IF 2370 A=PEEK(764)
IV 2380 IF A=%0 THEN LLP=-LLP
PQ 2390 IF A=33 THEN CD=-CD
VV 2400 IF A=28 THEN 2540
HD 2410 IF A=55 AND PPP<10 THEN PPP=PPP+%1
BC 2420 IF A=54 AND PPP>%0 THEN PPP=PPP-%1
LK 2430 IF A=12 THEN STP=%1:PAUSE %1
MR 2440 IF A=39 THEN SA=-SA
FJ 2450 IF A=44 THEN CM=-CM
KF 2460 OSS=SS:IF A=6 THEN SS=SS-%1
MM 2470 IF A=7 THEN SS=SS+%1
DS 2480 IF SS<%0 THEN SS=255
AT 2490 IF SS>255 THEN SS=%0
YQ 2500 IF OSS=SS THEN 2530
FO 2510 IF SA<%0 THEN SA=-SS:GOTO 2530
LK 2520 SA=SS
PE 2530 GOTO 2210
GO 2540 POKE 764,255
ZC 2550 ENDPROC
AM 2560 PROC FILES
DT 2570 X=%0:Y=5:NFF=%0:L2=LEN(E$)
IG 2580 NF=%0:OF=%0:NFU=%0:OFU=%0
JN 2590 POSITION %1,%2:? "D:*";E$
NN 2600 OPEN #%1,6,%0,"D:*.*"
CV 2610 INPUT #%1,D$
MQ 2620 IF D$(5,16)="FREE SECTORS" THEN 2690
JY 2630 FL=VAL(D$(15,17))
MG 2640 IF D$(11,13)<>E$(%2,L2) THEN OF=OF+%1:OFU=OFU+FL:GOTO 2610
GD 2650 NF=NF+%1:NFU=NFU+FL
NJ 2660 IF NF<65 THEN POSITION X,Y:? D$(3,10)
DE 2670 Y=Y+%1:IF Y=21 THEN X=X+10:Y=5
RR 2680 GOTO 2610
IH 2690 CLOSE #%1
KC 2700 POSITION 15,%2:? NFU;" used in ";NF;" file";:IF NF<>%1 THEN ? "s"
GT 2710 POSITION %1,%3:? D$(%1,%3);" free "
SG 2720 POSITION 15,%3:? OFU;" used in ";OF;" other";:IF OF<>%1 THEN ? "s"
VT 2730 POKE CUR,%0
JB 2740 POSITION 5,22:INPUT "Filename ";D$
WP 2750 POKE CUR,%1
RE 2760 IF D$="" THEN NFF=%1:GOTO 2790
GX 2770 F$(%1,14)="D:":L1=LEN(D$)
VY 2780 F$(%3,%2+L1)=D$(%1,L1):F$(%3+L1,%2+L1+L2)=E$(%1,L2)
ZS 2790 ENDPROC
GS 2800 PROC BRKTRP
DC 2810 POKE 16,112:POKE 53774,112
YZ 2820 ENDPROC
WL 2830 POKE CUR,%1
RH 2840 ? :? :? "Error > ";ERR
HU 2850 ? :? "Any key to restart"
KX 2860 GET A:TRAP 2830:GOTO 90
```

Features and OPINIONS

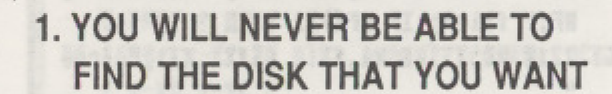
MURPHY'S VARIATIONS

A personal selection by Kevin Cooke



Many people have heard of "Murphy's law"; that strange phenomenon that seems to ensure that the worst possible scenario will always take place. However, many people still haven't heard of "Murphy's Laws of Computing", despite having experienced them many times before.

To help you recognise these laws, and to narrow the possibility of you experiencing them again, here is a list of some of the variations I have incurred.



1. YOU WILL NEVER BE ABLE TO FIND THE DISK THAT YOU WANT

Too true! You are certain to look through an entire disk box before finding the program that you want - it will always be the disk at the back of the box. However, when you next look for the disk and start from the back of a box, it will magically appear at the front again!

2. IT IS IMPOSSIBLE FOR A DISK BOX TO STAY NEATLY ORGANISED

So, you've finally get fed up with looking through an entire disk box to find the disk that you want, eh! What can you do then? Ah-ha! Why not devise a fail-safe storage system? You then spend hours organising programs into alphabetical order. Games are put into one box, utilities into another and PD into another. You spend a day printing numbered labels so that you can easily find the disk's correct position when putting it away.

Then you come back after a long day out and find that someone else has used almost every disk and totally ruined your carefully organised system. Not only are disks scattered everywhere but the ones that HAVE been put away are in the wrong boxes!

3. LOCKING YOUR DISK BOX WILL NOT HELP

Fed up of having your disks messed up, you decide to use the keys so kindly supplied with your disk box. Unfortunately, as you had to hide the keys to stop anyone else from finding them, you also forgot exactly where it was that you hid them! In desperation, you try to remove the disk box lid by removing the hinges. This is where you encounter law 4

4. YOU GLUED THE HINGES IN PLACE SO THAT THEY WOULDN'T KEEP FALLING OFF

This one explains itself. How were you meant to know that one day you might actually WANT the hinges to fall off?

5. CONFUSION ALWAYS OCCURS OVER FILENAMES

At least you might eventually find the keys to your disk box - the effect of losing them can eventually be overcome. Not so with losing a disk file! How many times have you written a brilliant program or novel and saved it to disk, only to accidentally save a new file straight over it with the same name? Again, this brings us onto the next rule.

6. ONLY FILES THAT ARE NOT BACKED UP WILL BE LOST

Of course you didn't. You're hardly likely to make a silly mistake when you've been up all night and have only stopped typing because you're too tired to press the keys, are you?

7. IF YOU BUY A PRINTER, YOU'LL START TO USE ENOUGH PAPER TO DESTROY A RAINFOREST

At first, buying a printer seemed like a good idea. You can finally show someone what you spent the weekend doing instead of going out - you'll never have to carry around your complete computer set-up and a convenient power source again! However, you soon realise that the printer isn't such a dream - it can really turn into a nightmare! As you'll never have got around to keeping a source of scrap paper nearby, you'll start to print even your rough drafts on your best quality paper. The problem here is that you'll never spot all of the mistakes on your first print - you'll need to print the same piece at least three of four times before you finally get the message that you should check through the WHOLE of the document before you print another copy. My bin must sometimes feel like an office supply shop with all of the paper it seems to store.

8. THE BITS OF COMPUTER THAT YOU KEPT AROUND FOR SPARES WILL NEVER COME IN HANDY

In fact, all they'll do is clutter up your already limited storage space. Not only is each part shaped so that it can't be stored in a room-efficient way, can you ever see yourself needing the parts from EIGHT broken joysticks?

9. SOFTWARE THAT YOU PAID OVER £10 FOR WILL SUDDENLY DROP IN PRICE TO UNDER £5

This is not only annoying but also costs you money in a way. However, don't think that by waiting you can save money. It is a fact that should you not buy a piece of software straight away, the company will either close down or will sell out. You can't win!

10. TEN MINUTES PROGRAMMING WILL LOSE YOU TEN HOURS SLEEP

This is one of the worst of the bunch - it can get at you in two different ways. Not only will the ten minutes that you were supposed to be staying up to finish the "keyboard input routine" turn into at least an hour, but when you do finally get to bed, it will be impossible not to dream about better ways of doing something that you previously programmed. Watch out for nightmares about Data Processing and high score save routines!

So, there are a few to watch out for. There are many more - I'll leave you to discover them! ●

The CLASSIC PD ZONE

As we return from the planet Dernou we find ourselves with the opportunity to enjoy some fun and relaxation. The Pudoso call fun the lifeblood of entertainment. So without further delay, it's time for some fun...

FUN FOR TWO

One of the many new disks recently added to the Page 6 Library is a collection of two player games entitled **FUN FOR TWO**. There are five games for you to enjoy with a friend.

FINDING FLAGS

The first game on the disk is one of my favourite two player games for the Atari 8-bit. **CAPTURE THE FLAG** was featured as an Antic disk bonus back in October 1989. It is an all-action game in which you must race through a maze to collect a flag and return it safely to your home base.

The screen layout is well designed. The top half contains the two display windows. The green player is on the left with the purple player alongside. Capture the Flag is a dual-display game, i.e. both players race for the same flag in the same maze, but they each have their own display window which shows the area of the maze they are in.

Below the display windows is the scanner. This shows the location of each player in the maze. Very handy for getting your bearings if lost in a section of the maze!

At the bottom of the screen, the "Flags Captured" and "Ammo" for each player is displayed. You begin a game with four shots of ammo. A player can blast a hole in the maze wall with each shot of ammo.

Capture the Flag begins with both players at their respective home base. The green player is at the top left of the maze and the purple player is at the top right. The flag is at the bottom centre.

The game is a mad race through the maze to capture the flag. Try not to use all of your ammo in getting to the flag - you may need it on your return! When a player captures the flag, the other player automatically possesses unlimited ammo. This means than while returning the flag to your home base you have to watch out for the other player who can blast holes through any wall in the maze... and shoot you!

If you are shot whilst carrying the flag, it is dropped where you stand and you are then returned to your home base. The other player can then pick up the flag and head for home (with only limited ammo). It is then his or her turn to watch out for you as you shoot your way through the maze.

When a player manages to make it back to home base carrying the flag, the round is won. A tune plays and an Atari flag is raised in the winner's display window. The first player to capture five flags becomes the champion. The maze changes on each round so you never know the direct route to the flag.

Movement of your player within the display window is quite jerky. Sound and graphics are very average. Colours are limited. However, the gameplay is outstanding! Capture the Flag is two player action at its best! It is frantic, funny and quite simply fantastic! Who cares about the graphics, animation or sound when a game is this fun to play!

with
Stuart Murray as your Tour Guide

CLASSY BREAKOUT

Moving on, the next game on the Fun For Two disk is a German program by the name of **UNICUM**. This is a very professional presentation of Breakout for one or two players. The object is to use a bat (or bats) to hit a ball up the screen and knock out coloured blocks. Clear all the blocks and you move onto the next level.

Unicum is very much in the same mould as Imagine's Arkanoid. Occasionally, a letter will fall from a block that has been hit by the ball. The on-screen instructions are in German so here are descriptions, in English, of the effects caused by catching the letters with your bat:

- **S** = Slow (the ball slows down)
- **L** = Laser (you can shoot the blocks)
- **K** = catch (the ball sticks to your bat for a few seconds)
- **D** = Double (your bat doubles in length)
- **N** = Next level (you advance one level)
- **E** = Extra life
- **B** = Bonus score
- **?** = Extra life or bonus score

There are four play modes in Unicum: One Player, One Player & Computer, Two Player and Demo.

The Two Player mode is a lot of fun. Both players play on the same screen and must co-operate to complete a level. Player 1 is in control of a bat covering the left-hand side of the screen. Player 2 controls another bat on the right. Watch out for the arguments when someone misses the ball! One Player & Computer mode plays in a similar manner. The only difference is the computer controls the right-hand bat.

Unicum is smooth and colourful and features lots of levels. It is a hot PD version of Arkanoid.

DUELLING TANKS

Next up on Fun For Two is **EXWALL**, a version of the classic tank battle game from Combat on the Atari VCS. One player starts at the left, the other at the right. In between are many shaped walls. The object of Exwall is to shoot your opponent's tank before he gets yours.

There are two types of wall - orange and blue. You can shoot orange walls with your tank. Blue walls are indestructible. However, by shooting and reversing at the same time you can change a blue wall to orange, allowing you to shoot your way through it. You can also create an orange wall in front of you with this option which means you can make a quick tactical retreat if under fire from your opponent.

The graphics and sound are very basic and look like a type-in game from the early 1980s. The gameplay is too slow to hold your interest for more than a few battles, however the battlefield designs are not bad and add a strategical element to the game.

Exwall is almost a good version of Combat. However, it is let down badly in that you can only fire in one direction! This, added to the criticisms mentioned above, makes for a poor rating. With a bit more effort, this could have been worth a few blasts. As it is, Exwall is simply a sector filler.

MORE TANKS

Next up is another attempt at the Combat tank battle. **TANK DUEL** is an old Compute! program which looks and plays like the original Combat.

The screen layout consists again of two tanks facing each other and obstacles in between. This time there are walls and bushes. The object is again to blast your opponent from the screen before he blasts you.

TANK DUEL is a lot more fun to play than Exwall. It has the advantage of eight-way firing which makes for better quality gameplay. Also, you can hide in the bushes and pounce on your opponent. The mazes are well designed and the explosions are nicely animated. The only criticism I have is that the bombs are pathetic and look like the blips in Pong.

I liked TANK DUEL. It's a good two player game and a reasonable version of Combat. It's also very indicative of a Compute! type-in, i.e. high quality. However, you can't beat the real stuff. For a mean tank battle, get yourself a VCS and a Combat cartridge!

WAY BEYOND PONG

All good things must come to an endand so we come to the final game on Fun For Two. **TV JAJI** (pronounced JAA-GEE) is a 1990's version of that 70's classic Pong. Full documentation is included and can be read or printed from the main menu.

The author, Thomas Starace, describes TV Jaji as "the ultimate souped up side-ways version of the classic volleying game with everything but the kitchen sink". He worked on the program for many years and had planned to release it in Antic before the magazine ceased publication. He has now released it as Shareware with a Registration Fee of $5.

TV Jaji begins with a long and impressive animated sequence which creates a good atmosphere. Press your joystick button and you move on to the options menu. There are loads of game options available. Select Option 4 (Easy) and you're away!

The game is basically horizontal Pong with aliens, bombs, springs, lasers, birds, missile launchers, etc. You control a paddle in front of a wall. The object is to not let the ball (or any objects) past your wall. If anything gets past, your plunger at the left of the screen moves down one notch. When it has moved all the way you have lost the game.

The various objects add spice to an already addictive format. Aliens throw the ball back at you. Mama Birds eat through your wall. Missile Launchers fire missiles at your wall. Sudden Death Rocks cause a final play off by dropping both plungers. There is always something going on! Presentation is good with colourful graphics and various sound effects. Unfortunately, the gameplay is let down slightly by jerky animation of the ball. The ball is central to any game of this type. If only the author had created a smooth scrolling ball then this game would have been a real cracker. This gripe aside, TV Jaji is impressive. It's not the ultimate version of Pong but fun nevertheless.

Overall, Fun For Two is a scrumptious diet of frenzied two player fun. Capture the Flag and Unicum are wonderful examples of how good public domain software can be! Tank Duel and TV Jaji are good efforts which add to the value of the disk.

CLASSIC PD ZONE RATING: 79%

As we approach Earth we can see the benefit of fun. All crew members and passengers are relaxed and rejuvenated, ready for the busy times ahead. After all, all work and no play makes your Atari 8-bit a dull circuit. Give it some juice without delay!

In the words of James T. Kirk, "It was ... fun."

The disk reviewed was:

DISK 250 - FUN FOR TWO

TUTORIAL TIME

by Ian Finlayson

DAISY-DOT FONT EDITOR

If you are already enjoying Daisy-Dot II there are further treats in store. You have probably tried all the fonts that came on the DDII disk, and no doubt you like some and hate others. If you are not satisfied with this small selection there are many more on the **Daisy Dot Accessory Disk** (DS#22).

Even with all these fonts you will probably feel the need for something different at some time. You may not want to start from scratch on a new font, and indeed this is a surprisingly difficult task, but it is comparatively easy to make small changes to the detail in a font to improve it for your personal use.

The DDII font editor does not need much explanation. The best way to learn how to use it is to play, but there are one or two points that are worth remembering if you want to avoid heartache.

DON'T CORRUPT GOOD WORK

Before you go on to extensive font design you will want to view and modify some of your stock fonts using the DDII Editor. This is fine, but you do not want to change a font and then find that your changes don't look as good in the morning as they did the night before, only then realising that the original is no longer recoverable.

This is easily avoided. When you load a font into the editor save it immediately onto a new disk under a new name. All your changes are then made to the new font and the original is still intact when you want to use it again.

GETTING STARTED

The font editor is on side two of the DDII disk. First start your computer with a DOS disk, then load the font editor using DOS option L. The editor file is called FONTEDIT.COM.

Now you can load an existing font. Put your disk with the fonts into your drive and if you know the name of the font just type L and you will get a prompt Load Font: Drive: in the box at bottom right of the screen. Type 1 for your first drive (or another number if you are one of the few who have a multiple drive system!) and then the font name. You do not have to add the .NLQ extender as this is assumed by the program. If you have forgotten the name of the font file you can browse the disk's file index by pressing the number of the drive (usually 1). This brings up the first item from the directory in the prompt box. Each time you press a key the next entry from the directory is displayed. It is not possible to load the font directly from this prompt. You have to note the name and then go back to the L procedure described above.

Once the character set is loaded a single character will be displayed in a box on the left of your screen ready for editing. The name of the font that is currently in memory is shown at top right of the screen and the letter or character that is currently being edited is also

shown. This may seem unnecessary, but if you make extensive modifications your character may not look anything like the standard alphabetical letters. You may make a character set that combines capital letters and bullet points or other symbols for presentation purposes, or a series of patterns for borders or separators.

A BIT OF EDITING

It is possible to edit characters using the cursor keys, space bar and Return key, but it is much easier with a joystick. In either case you edit one point at a time. Daisy Dot handles proportionally spaced as well as fixed pitch fonts, so different characters can be different widths. The height of the grid on which the letters are drawn is always 16 cells, but the width can vary from 1 to 19. For a fixed pitch font just ensure that all characters are the same width - this is useful when you are preparing a document with columns in, as it allows you to position columns accurately and consistently.

If you are using the joystick you just move the cross shaped cursor to the position you require then press the fire button to draw the point. If you want to erase just press the space bar to switch from drawing to erasing. There is an on-screen display showing <Draw> or <Erase> on the right near the top which reminds you which mode you are in.

The more difficult option is to use the cursor keys. The space bar works the same - switching from draw to erase - and the cursor keys in combination with CTRL move the cursor (the + and - cursor keys bring up the next and previous characters in the set if you don t hold down CTRL). Return is used instead of the joystick fire button to fill or erase a point.

LETTER SPACING

You will remember that the spaces between characters are set in Daisy-Dot, so there is no need to include the space between characters when designing letters for use in DDII. The character must span the full width of the grid you have selected. If you leave space down the side of the character and DDII then adds more you will end up with unevenly spaced, untidy looking and difficult to read print.

The flexibility of this spacing can be put to good use. One of the fonts on the accessory disk is called Tile and it has a line drawn down one side of each character and across the bottom to give a result that looks like miniature Scrabble tiles.

OTHER CONTROLS

On the right of the screen is a short list of controls. Two further lists are accessed by pressing Select. Some of these have been mentioned already and most are self explanatory. The complete list is:

<	- Decrease width
>	- Increase width
- (minus)	- Previous character
+	- Next character
G	- Goto specific character
T	- Transcribe
R	- Restore character
1 to 8	- Directory of drive
S	- Save font
L	- Load font
W	-clear Window
M	- clear Memory
P	- Print character
Q	- Quick print
F	- print Font
V	- Vertical flip
H	- Horizontal flip
CTRL+V	- Vertical Scroll
CTRL+H	- Horizontal Scroll
X	- eXit to DOS

I will amplify one or two of these.

T (Transcribe) brings in another letter. For instance, if you are about to work on the letter R you can go to the R position in the font and Transcribe the beautiful P you have already created thus eliminating most of the work needed to create the new R.

R (Restore character) reverses the current editing of one character. It does not necessarily restore it to the state when you loaded the font, only to the state at the beginning of the current edit of that character. This means that if you edit a character for a second time in the same session you can only restore to the state at the end of the first edit.

W (clear Window) clears the current character while **M** (clear Memory) wipes the current character set from memory (take care - this is irreversible!).

The flip and scroll features are most useful for graphical work such as border styles where you want to set up a pattern

FINALLY

Even if you never create a masterpiece of a font for yourself it is well worth playing with Fontedit. It will give you a real insight into the problems and constraints that the designers of typefaces have to face. Some letters are comparatively easy to craft, but there are always some tricky ones and it can be very difficult to achieve a style that is consistent, legible and good looking across the whole of the upper and lower case alphabets, the numerals and punctuation marks.

I hope you will give it a try. Have fun! ●

The Accessory Shop

ISSUE 71

CONTINUING CLASSICS

Although there is no new software nowadays there is still a chance to buy the classics from yesteryear. Stocks are dwindling though and this could be the last chance to complete your collection . Buy now!

ASTEROIDS
Asteroids surround you! Use your photon cannon to defend your spacecraft from a field of asteroids which become progressively smaller, swifter and more dangerous. Watch out for enemy saucers too! For 1 to 4 players

ROM CARTRIDGE
OUR PRICE £5.00
LIMITED STOCKS

DEFENDER
An all-time classic from the arcades. Aliens have swarmed over your planet attempting to capture humanoids and transform them into destructive mutants. Fortunately you command Defender, the most deadly spaceship ever. Keep an eye on the radar for the next attack wave. 1 or 2 players.

ROM CARTRDIGE
OUR PRICE £5.00
LIMITED STOCKS

GALAXIAN
Swarms of Drones, Emissaries and Hornets lead the way in attack and protect the Commanders who guide the force. Your only hope is to blast them out of the sky before they destroy you. True classic excitement that can still give you sweaty palms. 10 skill levels.

ROM CARTRIDGE
OUR PRICE £5.00
LIMITED STOCKS

MILLIPEDE
Creepy crawly bugs like jumping spiders, buzzing bees, bouncing beetles, mosquitoes, dragonflies, inch worms and earwigs have invaded your little garden patch and you have to blast fast to get rid of them! Fast action graphics and great sound. Use your Trak-Ball for even greater play power.

ROM CARTRIDGE
OUR PRICE £5.00
LIMITED STOCKS

KABOOM
The Mad Bomber is back and intent on blasting you to kingdom come unless you can get your buckets of water out in time to catch and diffuse the bombs. One of the simplest concepts yet highly entertaining, especially for the kids.

ROM CARTRDIGE
OUR PRICE £3.95
LIMITED STOCKS

MUSIC PAINTER
An exciting educational program that helps to teach music by using colours instead of notes. Change the fifteen supplied songs to feature different instruments, make the notes longer or shorter or transcribe your own songs. No musical knowledge required to make your own great music.

DISK ONLY
OUR PRICE £4.95
LIMITED STOCKS

POLE POSITION
THE racing game for the Atari Classic. Very little has improved on this winning formula that brings untold fun to young and old alike.

ROM CARTRIDGE
OUR PRICE £5.00

TENNIS
Forehands and backhands, driving approach shots, angled volleys, overhead smashes and tricky lobs - you've got all the strokes in Tennis! Here's the action packed game that challenges you to play at your best. Play singles against the computer or another player or doubles against another player.

ROM CARTRIDGE
OUR PRICE £5.00
LIMITED STOCKS

10-PRINT
Owners of the 1029 printer just have to have this superb utility that enables program listings to be printed out with all the control characters (just as you see in New Atari User) as well as printing in any choice of font. Full instructions are included for you to print out your letters and other documents in any font you choose

DISK ONLY
OUR PRICE £4.95
PAGE 6 EXCLUSIVE

CASSETTES at just 95p each!

180
A great darts challenge. Eight opponents, digitised speech, two player option. live joystick control, full matchplay scoring, a sense of humour, superb playability.

BOMB FUSION
A terrorist gang has planted bombs throughout the Sellerscale Nuclear Processing Plant and you have to go in and save the plant and possibly the Northern Hemisphere from destruction

DESPATCH RIDER
Join the growing band of street demons who terrify the population of the big cities to get the parcels through. Plan your moves to make some money, but don't take too long - time is always short. Gain an instant macho rating and be a despatch rider with this simulation

FEUD
To win at Feud you must "out-spell" your rival Wizard Leanoric. In Kieke's herb garden you will find the ingredients for your spells but tread carefully as strange things can happen in this game of magic and mystery

FOOTBALL MANAGER
Features include Transfer Market; full League tables; injuries; save game facility; promotion and relegation; FA Cup matches; managerial rating; 4 divisions; as many seasons and you like; pick your team using seven skill levels.

GHOSTBUSTERS
Has anybody seen a ghost? Matter of fact yes they have! At this very moment hundreds of ghosts are making their way to the infamous spook central. Only you can save the world from a disaster of biblical proportions.

GUN LAW
Four months of bloody alien attacks have taken their toll - all the surviving inhabitants have fled and arson attacks have been made on your weapon stores. You are left to fight alone against ruthless and bloodthirsty killers with just a single machine gun

HENRY'S HOUSE
Little Henry has shrunk. He must navigate his way through the royal household to find the cure. Avoiding all the obstacles in his path, from terrible toothbrushes, through pestiferous parrots and chefs chasing chickens, to a final encounter with the vicious vampire!

INVASION
Mobilize your units and prepare for battle. This all action space conflict requires skill, strategy and tactics. You must destroy the weather control station in order to win the battle but every move you make the enemy will counter, and they're waiting for you to slip up

KIKSTART
The ultimate off-road motorbike scramble simulator. Guide your rider carefully over the obstacles in this all action simulator for 1 player against the computer or 2 players against each other as well as the clock

KNOCKOUT BOXING
Challenge for the Heavyweight Championship of the World by boxing your way past nine progressively more skilful opponents. You will need speed and skill to deliver stomach punches, points scoring head jabs or deadly upper cuts. Your must keep your guard up or the referee will count you out.

LOS ANGELES SWAT
Rescue the hostages from the terrorist gangs holding out in West L.A. Clean up the streets. Blow away the bad guys and be a hero on network T.V.! Fail and you won't be coming back to watch it. All action joystick bending combat for those with the skill to survive!

MILK RACE
Cycling 1,000 miles is no mean feat - and you could end up feeling pretty exhausted by the time you've finished playing this superb race simulation designed with the Milk Race in mind

MR DIG
An old favourite in which Mr Dig has to dig for hidden food supplies in the 'Meanie' territory below ground. As he digs he can eat cherries or crush the Meanies with apples. Special treats earn extra points and a Magic Power Orb can kill all the Meanies.

NINJA
Blasts the belt off all other martial arts games! That's all it says on the inlay! Someone sure reckons this is the best punching, kicking, ducking and diving game around

ON CUE
A challenging real life simulation which combines Pool and Snooker on the same cassette. An absolute must for both enthusiasts and beginners alike. If you have ever wanted to be at the Crucible now's your chance

PANTHER
Save the last humans on Xenon before the alien hordes turn them into Sunday roast! Take your ground attack ship through this 3D scrolling mega shoot-em-up with great graphics and unbelievable soundtrack

PENGON
Can you save Penguin Willy from the ferocious mutant sea lions? Stun them by knocking them against the walls or crush them to a horrifying death with sliding ice blocks. High speed arcade action game, great graphics and music.

PLASTRON
Take your place in a small band of pirates out to steal fossil fuels from the biggest corporation in the galaxy. You must guide your shuttle craft along the surface of the planet Plastron to collect as much fuel as you can from the heavily defended mine zones and then rendezvous with the supply tank

PROTECTOR
Assigned to Fort Rucker, the US Army Helicopter Training School your aim is to become the best chopper pilot this side of the Iron curtain. Your mission consists of a strategic battle of wits between yourself and either another pilot or a computer controlled RPV

ROGUE
You are the ROGUE. Your mission is to search the Dungeons of Doom for the Amulet of Yendor. In the dungeons you will find many things to aid the quest for the Amulet. You will also encounter fearsome monsters and fiendish traps that will challenge all your skills

REVENGE II
The Mutated 90 foot high, laser spitting death camels have rebelled against their captors the Zzyaxians and are out for revenge! All action, highly graphical shoot-em-up from Jeff Minter

ROCKFORD
The only true arcade version of the classic game Boulderdash. There are four levels on each of five different worlds with four screens on each level. It all adds up to eighty totally different playing screens.

SIDEWINDER II
It is 27 years since the final battle of the war with the aliens. 27 years of peace have reigned in the Western Spiral Arm of the Galaxy. All this is about to change. Step aboard your craft and prepare to defend mankind in this all action space blast

SPEED HAWK
A smoothly scrolling arcade game in which you must defend the ring worlds of your solar system from space pirates. You alone can pilot the single seater fighter to undertake the task of destroying the mutant guardian that protects the fleet of pirate ships

SPEED ZONE
Enter the Speedzone in a frantic defence against marauding alien forces. A survey ship sent into the area comes under attack. As an enemy vessel draws closer your "STARFIRE" class attack craft is launched

MORE 95p CASSETTES ON THE PAGE 56 ☞

DISKS ... DISKS ...

PANZER GRENADIERS

In this exciting solitaire wargame you make the decisions for a regiment of the elite armoured infantry attached to the Panzer Grenadiers. Your forces also include mortar, artillery, Panzer IV, Panther and Tiger units. The Russian enemy is directed by the computer which will fiercely challenge you with its own complement of infantry, tanks and anti-tank guns. Three levels of difficulty, joystick control, hi-res graphics.

OUR PRICE £5.00

LANCELOT

Level 9 recreate the time of wizards and the Knights of the Round Table in a three part adventure spanning the complete saga of the quest for the Holy Grail. Superbly researched and superbly written this text adventure is full of atmosphere and highly recommended.

OUR PRICE £5.00

RAMPAGE

It's rough and tumble all the way as you control three incredibly nasty characters which bear a remarkable resemblance to King Kong, Godzilla and Wolf-man through an orgy of destruction in Chicago, New York and San Francisco. You have 150 days of destruction in 50 different cities. Time for some revenge!

OUR PRICE £3.95

THE E FACTOR

The E factor represents the amount of time the energy sources on the planets in our galaxy will last. Many planets need emergency fuel capsules delivered if they are to survive. You must plot the interplanetary course and guide your craft through the quadrants filled with obstacles such as space mines, alien fighters and spinning asteroids. Can you complete a mission before another planet calls on your services?

OUR PRICE £3.00

DRUID

Another classic in which, as Last of the Great Druids, you wander through the Dungeons of Acamantor with your mighty Golem by your side on a quest to destroy the four demon princes. As you delve deeper into the dungeons you will find chests containing spells of formidable power to aid you and Pentograms of Life which will heal and revitalise you. Excellent graphics and superb gameplay make this one of the best arcade games.

OUR PRICE £3.95

GAUNTLET THE DEEPER DUNGEONS

If you have the original Gauntlet disk then you will know how good the game is and will want to extend play with the Deeper Dungeons. Over 500 new dungeons are here for you to explore. This is the way to revive your interest in Gauntlet and play on for many more hours or days! This is a data disk only and requires the original Gauntlet disk.

OUR PRICE £2.95

NEW YORK CITY

Welcome to The Big Apple. This hurried jungle of steel, concrete and glass bristles with fascinating sights and more than its share of danger. From the placid greenery of Central Park, there is no city in the world like New York, and boy are you about to find that out! As a visiting tourist you only have a limited time to see all the sights, but New York City has a little more excitement, a little more danger in store than a mere sightseeing trip to the zoo!

OUR PRICE £3.95

BALLBLAZER

The year is 3097 and you are the contestant in the most competitive and by far the most popular sport in the universe. Jump immediately into head-to-head action against a friend or hone your skills against a selection of Droids. Either way, you're in for the match of the century! Excellent graphics and split screen action have made this one of the Atari classics.

OUR PRICE £3.95

JUNO FIRST

A fast and furious space shoot 'em up translated from Konami's early arcade machine of the same name. Dozens of alien craft will attack from all sides and you must be quick to blast them away and earn your bonuses. If you feel that you are going to die then you can take the last resort and warp away through a kaleidoscope of colour. Similar to invaders, this fast shoot 'em up will appeal to any arcade game fanatic.

OUR PRICE £3.95

JUGGLES RAINBOW

A first computer experience for children aged 3 to 6 that teaches the concepts of above, below, left and right plus letter recognition allowing children to enjoy learning with colours and music and games they can create and play themselves

OUR PRICE £2.95

THE LIVING DAYLIGHTS

Control James Bond through eight fast and furious levels from Gibraltar to Afghanistan and you will encounter the SAS (friendly), the KGB (not so friendly) and enemy helicopters (very unfriendly!). You are up against Brad Whittaker, international arms dealer and megalomaniac, Necros, his ruthless sidekick and Koshkov, the double dealing KGB General. You may fall in love with the beautiful Czech cellist Kara, but can you trust her?

OUR PRICE £2.95

NIBBLER

Slinking through an unknown land Nibbler finds himself in an iridescent world of constant change. As time grows short his body grows longer and he risks running into himself. Can he survive?

OUR PRICE £1.00

ROM CARTRIDGES

All brand new in original boxes, mostly shrink wrapped

ONE ON ONE

Play basketball with two of America's top players in this great sports simulation which features realistic offensive and defensive moves, fatigue factors, hot streaks, a shot clock, even instant replay and a shattering backboard! Like the game of basketball itself, One-on-One rewards you for playing with your head as well as your hands. Master the joystick moves, sharpen your timing and hone your reflexes. Jump! Shoot! Score!

OUR PRICE £6.00

US FOOTBALL

American Football is a big craze in this country and you can now play at home. Outsmart the defence, pass with amazing accuracy, run with speed and agility, make tackles, select offensive and defensive plays and more. You can take on the computer in a practice game or challenge a friend to a dramatic video bowl game of your own in a packed stadium. All the thrills of the gridiron

OUR PRICE £6.00

SUPER BREAKOUT

Breakout was the original simple yet totally addictive game and this enhanced version will provide even more addictive fun. Needs paddles.

OUR PRICE £3.95

There are very few ROM cartridges left now for the Atari - complete your collection while you can

FIGHT NIGHT

Fight Night brings you all the thrills of the boxing ring as you face five of the most brutal fighters ever. Its five separate battles are total war with relentless action. The Boxing Constructor Set allows you and your opponent to create your own perfect boxers, selecting stamina, intellect and style. Train, spar and step into the ring to pit your perfect boxer against the computer or another opponent.

OUR PRICE £6.00

POLE POSITION

Everyone has heard of Pole Position, the racing game that inspired almost every racing game since. It may be the original and some other games may have added features but Pole Position still retains its challenge after many years. One of those games that has exactly the right balance of game play and graphics to make it a classic that will last forever. If it is not in your collection, make amends now!

OUR PRICE £5.00

HARDBALL

All the thrills of American baseball can be yours on a summer afternoon in the ballpark. Sit behind home plate, along the left field line, down the right field line or join the manager in the dugout. Look over the pitcher's shoulder as he throws the next ball. You control all the action of the batsmen, pitchers and fielders as you try and battle your way to the top of the league. An exciting game for one or two players.

OUR PRICE £6.00

BASIC CARTRIDGE

Some programs, especially some early public domain programs won't run on the XL/XE but they will if you plug in the old version of Basic.

OUR PRICE £2.95

DISKS ...

SILICON DREAMS

Taking the role of Kim Kimberley you are a leading participant in the colonisation of Eden, a planet prepared for human habitation by an advance guard of intelligent robots who battle with the native and highly aggressive fauna. In this highly structured and realistic environment you must move your mind into the twenty-third century. Silicon Dreams is three excellent graphics adventures - SNOWBALL, RETURN TO EDEN and THE WORM IN PARADISE from the masters, Level 9

OUR PRICE £5.00

ZORK 1

The Infocom classic and the adventure game that changed the way all future adventures were written. The Great Underground Empire of Zork is well documented by now and thousands of players have become addicts graduating to Infocom's more difficult adventures. Zork I is the ideal introductory level adventure for beginners or those with a little experience. If you have never ventured underground before now is the time to try, it's never been cheaper to expand your universe! Classic original Infocom packaging with excellent manual and a map.

OUR PRICE £2.95

MAKING MUSIC

with John S Davison

SHARING MIDI DATA

I have lost count of the number of music related programs published for the ST over the years, and I've written about many of them in these pages. The total is probably into three figures by now. But there's one thing about many of them I've found extremely annoying - they use their own proprietary file formats for storing MIDI data. This means that the incredibly wonderful songs you compose with your Stoneberk sequencer and store on disk can't be read by your friend's Seaflab sequencer and vice-versa, so you can't easily swap files to show off your work to each other.

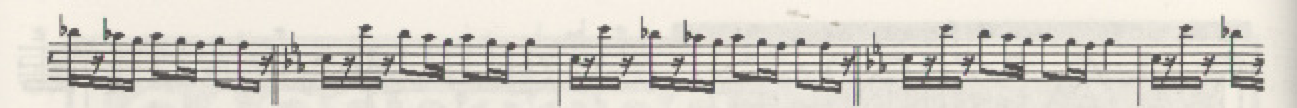
That may have been the situation a few years back, but in fact there's now a fairly simple solution to the problem. The answer is to have a common file format that any sequencer can use - as long as the music program authors choose to implement it, that is (and most now do). It's usually included as an extra file format - sequencers still tend to use their own native format for normal use for performance reasons, but if file interchange with another program is required then the data can be saved out using a standard format. The idea isn't new as there are parallels in other areas of computer applications. For instance engineering drawing programs have standard files for interchanging technical design data between different applications, and Rich Text Format has been available for some time now to move data between different word processing programs.

STANDARD MIDI FILES

MIDI's answer is the Standard MIDI File format. Perversely, there are three standard formats, not one. They're called, with stunning originality, Format 0, Format 1, and Format 2 and are intended for use in different circumstances, depending on what you're trying to achieve. However, not many music programs support all three types. Format 0 and Format 1 are found on most top flight products, while lower cost software often supports only Format 0.

Format 0 is the simplest in function. It considers everything to be a single track, so anything written out in Format 0 ends up with all tracks merged together into one track. MIDI channel identity is preserved, so the music will still play as it did originally, however when you read it into another program you'll find there's only one track. High spec sequencers such as E-magic's Notator usually have a "split" function which separates out the events for each channel and places them on their own tracks again should you require this. However, if your original sequence used multiple tracks sharing a common MIDI channel then splitting wouldn't work as there would be no distinguishing feature to identify which piece of data originally came from where.

Format 1 gets over the limitation of shared channels by implementing multiple track support. Using Format 1 if you write out a ten track sequence then read it into another program which has Format 1 support you'll find you still have ten tracks of MIDI data. This means you don't have to mess around with the splitting operation, nor can you "accide-



ntally" destroy a track's independent identity.

Format 2 is quite rare, allowing you to save single independent tracks from within a multi track sequence and read them back in to another appropriately equipped music application. If you really want this facility you can usually achieve a similar function via the other formats in conjunction with judicious use of the sequencer's editing facilities.

Before you ask - the reason why Standard MIDI Files haven't completely replaced the proprietary formats is because of performance. Each manufacturer uses his own favourite methods of compressing and storing data so it takes up a minimum of disk storage space and can be read and written quickly. The inevitable compromises necessary in designing a standard format lead to much bigger files and slower file operations. The proprietary formats are used for "internal" file storage, i.e. for data which is destined to be read and written only by the same program. Standard MIDI Files are produced when an "external" file is needed, i.e. when a file is to be "exported" to a different program. That program then "imports" the file and converts it to its own proprietary format for further internal use.

Unfortunately, although described as a "standard", there are differences in implementation of Standard MIDI Files between different application software packages. So beware - a given combination of hardware and software may not work exactly as you expect.
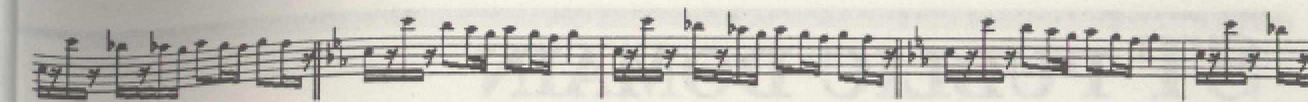
CROSS PLATFORM DATA SHARING

A few years ago the Atari ST reigned supreme as THE computer for creative music applications. Thanks to Atari's indifference and marketing failures the IBM PC and Apple Macintosh are now probably more popular music making platforms. Atari's use of the IBM format (more or less) for the ST's floppy disks means that it's now very easy to transfer MIDI files back and forth between ST, PC, and Macintosh systems.

The PC can read ST disks, so can therefore read Standard MIDI Files without too much trouble. Similarly, the ST can read Standard MIDI Files produced on a PC. The Mac uses its own floppy disk format, but does have a PC compatibility function allowing it to cope with PC disks too. This means the Mac can also read ST Standard MIDI Files. This is great if you regularly use several different types of computer system (as I do), giving you great flexibility in where you work. But what if you want to transfer MIDI data to some other platform which can't read IBM format disks or can't handle Standard MIDI Files? Well, life suddenly becomes a little more complicated.

You may have an old hardware sequencer on which you've prepared some music and stored on its built-in floppy disk drive, and now you need to transfer it to someone else's ST or PC so they can do some more work on it. This sort of collaborative working is required all the time in the music making business. The trouble is, your old sequencer saves its data using a completely non-standard disk format which can be read only by other sequencers from the same manufacturer. A similar problem occurs if you have MIDI files on your beloved old Atari Classic, created perhaps with MIDI Master, and now want to move them onto another platform.

Usually the only common factor between the platforms is that they both use MIDI. The common link between them is therefore the MIDI interface, so the solution involves connecting them together with MIDI cables. Now, if you play back the sequence on your old sequencer the MIDI data will be transmitted down the cable to the ST, which will see it as any other incoming stream of MIDI data. The



solution then, is to use another sequencer program on the ST and record the incoming MIDI data stream. It sounds simple, but as with most things there are snags.

FIXING THE PROBLEMS

First, there's a question of timing. It's possible to make the transfer in the way just described and the MIDI data would play back OK from the ST, but if you wanted to view the data for editing purposes you'd have problems. This is because you couldn't guarantee starting both sequencers up at exactly the same time, so beat 1 of bar 1 on the sending sequencer might occur slightly before beat 1 bar 1 of the receiving system. The result viewed on a graphical score editing program such as Notator is horrible, with odd fractions of notes tied across beats and bar lines. You could perhaps use the ST sequencer's quantising facilities to drag the notes back into time, but this is messy and may have other side effects you don't want.

The answer lies in the use of MIDI synchronisation - as discussed a couple of issues back. If you arrange for the sending sequencer to act as the master, transmitting MIDI clock messages with its data, and set the ST sequencer up as a slave so it locks onto them, then the two systems will run in precise synchronisation and beat 1 of bar 1 will occur at exactly the same time on both. When you view the results of the transfer with a score editor it now looks fine from a timing point of view, but you'll probably find you've hit the second snag.

Actually, we've already discussed this second problem. You may discover that all the data is stored as one track. In practice, you've actually used the equivalent of a Standard MIDI File Format 0 to transfer the data so have the same problem to solve if you need the data separated out into its original tracks. Just use the ST sequencer's split function - if it's got one. Some ST sequencers are able to do the separation "on the fly". They can look at the channel information as the data is received and route the MIDI events straight to their appropriate tracks - just like a Standard MIDI File Format 1 transfer. This is the perfect solution if your software supports it.

Unfortunately there are a host of other little snags that can crop up when transferring data in this way, and we don't have space to discuss them here. However, it is a viable practical method and I've actually used it in anger on several occasions - but Standard MIDI Files are usually much less hassle if you can use them.

THE FINAL SEQUENCE

Well, that's about it as far as our detailed exploration of MIDI goes. We've covered a lot of ground since this series of articles began about a year ago, and I hope you've found it interesting and useful. I'm still fascinated by the whole concept of MIDI and believe it's one of the best thing that's happened to the music world in the last 20 years. It's also about the only application area that caused the Atari ST to be taken seriously by the world at large, as most professional music production studios have had at least one ST system in their inventory at some time. Without MIDI the ST would have been just another "home computer". More importantly, through MIDI creative music making facilities have expanded beyond recognition, and it's brought a host of new music application tools to both amateur and professional musicians. It has also been responsible for the production, and perpetration onto an innocent public, of some truly awful music ... but that's another topic entirely! ●

ST PUBLIC DOMAIN



ROUNDUP

THE WORLD OF BUDGIE

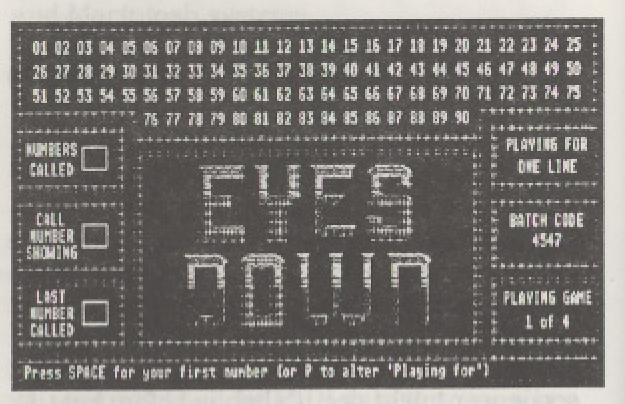
Budgie UK were the first company to use the 'Licenseware' concept. They offered their software disks at fixed prices of £2.75 - £3.95 which allowed themselves, the author and the PD library a slice of the cake. Most importantly, payment to the authors meant a constant flow of low-cost quality software for the end user.

Sadly, in late 1994 Budgie UK decided to stop supporting the Atari ST. However, they did at least release all their disks into the public domain which assures the continued availability of their current range of titles. It also means that all Budgie disks are now the same price as normal PD disks.

PD Roundup this time offers you a glimpse into the world of Budgie.

by Stuart Murray

BINGO!



PRO BINGO CALLER is a professional Bingo system for your ST. It brings the game of Bingo directly to your home or social group.

After an impressive title picture you are presented with the main screen and asked "Do you want to print any Bingo Card books?". By following a number of prompts you can use Pro Bingo Caller to print out your own game books - very handy if you are planning a game of Bingo for charity. Batch codes are given to each book allowing you to check that a winner is using the correct book for a particular session.

The main screen is well designed and contains all the necessary information for Bingo calling. The numbers (01-90) are displayed at the top. When called they are bordered so that claims may be checked.

At the left-hand side of the screen there are three boxes displaying the amount of "numbers called", "call number showing", and "last number called". Over on the right are another three boxes. "Playing for" can be one line, two lines or full house. This serves as a reminder to the caller of what is being played for. The "batch code" box displays the 4-digit security code for the session. To check which game is in progress, refer to the "playing game" box (e.g. "1 of 4").

The large window at the centre of the screen displays the call number showing. At the beginning of each game, a large "EYES DOWN" is displayed. You then use the Spacebar to call numbers.

Pro Bingo Caller is an effective, easy-to-use program. It comes complete with a printed manual.

LET'S GET DIZZY!

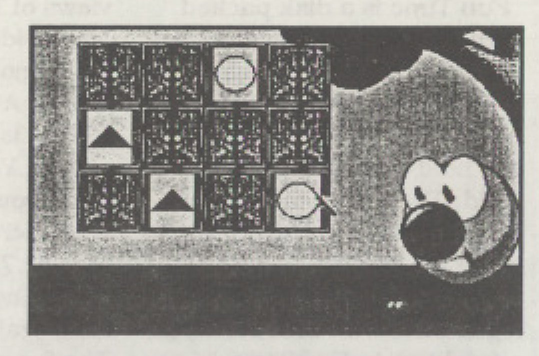
Budgie UK have also released quality educational software. **FUN TIME** is a collection of eight educational games covering a variety of topics. This disk is aimed at children aged 5-8. The central character of Fun Time is a chap called Dizzy who sports a blue head and red nose!

The games are split into two groups of four. The first group consists of Shape Fun, Keyboard Fun, Clock Fun and Picture Fun.

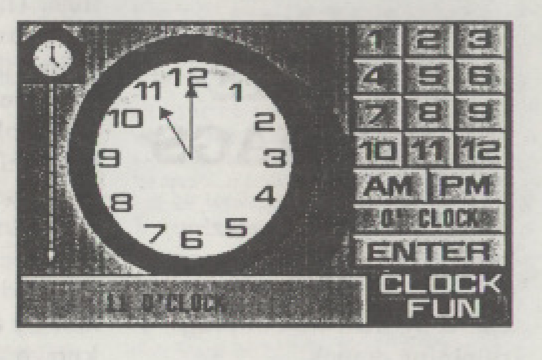
Shape Fun is a simple concentration game in which you must match pairs of coloured shapes hidden behind closed doors. To open a door you must click on it with the mouse. There are three difficulty levels which range from three to seven pairs of shapes.

Within **Keyboard Fun** there are four games. You begin with the Capital Letters Game. A screen appears displaying a snake, tree, wall and keyboard. After a letter scrolls smoothly along the wall you must enter it on your computer's keyboard. The object of the game is to help the snake climb the tree by correctly entering each letter.

Next up is the Lowercase Letters Game which plays in the same manner. The Parachute Game is a race against time. As a letter falls from the sky you must enter it on your computer's keyboard before it hits the ground. The rate of descent increases after a while and becomes very fast. The final game within Keyboard Fun is called The Word Game. A five letter word is displayed on the screen. You must enter this word correctly to progress. Capital and lowercase letters are mixed within each word, e.g. "WHicH". If a wrong letter is entered, a magnet carries it off and replaces it with the correct letter.







Fun Time also teaches children how to tell the time. In **Clock Fun**, a large clock face displays a time and the child must use the mouse to enter this time from a grid of numbers. A 24-hour clock lesson is also included.

The final game in the first part of Fun Time is called **Picture Fun**. It is a word/picture identification game. The screen displays an object within a picture frame. There is a ladder on either side of the frame. Dizzy is on the bottom rung of the left ladder. On the opposite ladder is The Meanie! You must help Dizzy to reach the top of his ladder by successfully identifying the object in the picture frame from a selection of five words.

The other four games on the Fun Time disk are **Money Fun 1 & 2**, **Seasons** and **Mouse Fun**. They cover the use of coins, the seasons of the year and the ST mouse. Seasons Fun is particularly impressive.

Fun Time is a disk packed with fun educational software. The eight games are very user-friendly and the hands-on approach to each will hold the interest of the child. The presentation is colourful and humorous. Good value for money!

The Page 6 ST Library catalogue mentions that there are a few bugs in Fun Time which cause the game to hang up. I spent quite some time examining the eight games in detail and experienced no such problem. Apart from the odd icon shadow and an annoyingly jerky mouse pointer in a part of Mouse Fun, my copy of Fun Time played just fine.

BUDGIE DISK MAGS

Maggie is a disk magazine by The Lost Boys demo crew. Each issue is heavily influenced by their love of programming demos.

MAGGIE 7.0 begins with two intro demos featuring scrolling messages, music, starfields, etc. The first demo is not bad. The second isn't up to much. There are dozens of articles on the disk covering a wide variety of topics. There is an editorial, a show review plus lots of cheats, reviews (including Gods, Navy Seals and Team Suzuki), interviews, programming tips, jokes, etc. There is also a PD section with reviews of The Decade Demo, Dark Side of the Spoon, The Yo Demo and Tomorrows World. A drop-down menu format is used to select an article. You can also alter the background music, print text, etc. The bonus demo on Maggie 7.0 is The Flying Brains which features spinning brains in a 3D starfield. The function keys select the presets and you can change the music with the 0-9 keys. A reasonable effort. Also on the disk are some utilities including a couple of virus killers.

Maggie 7.0 is nothing special. A few of the articles are interesting but most are the usual demo-obsessed offerings. The demos on the disk are of average quality. The virus killers may prove useful to those without UVK. The editor of Maggie 7.0 describes it as "left overs" from previous issues. I tend to agree with him.

Budgie UK also brought us The Ledgers - a disk magazine by another demo crew known as The Untouchables. The Ledgers is very similar to Maggie.

THE LEDGERS VOL.8 features a huge text section. You select the type of article by playing a platform game in which you control a warrior character with your joystick or keyboard. The graphics are of commercial quality. By standing in front of a door and pressing your joystick button (or hitting the Spacebar) you enter part of the text section. These parts include features, usuals, cheats, jokes, reviews, serious stuff, gallery, news, interviews, etc. There are reviews of Midwinter II and Stereo Master. The cheats section features Lotus 2, Turrican, Lemmings and Rail Road Tycoon. There are also short stories, poems, pictures, etc. The software on the disk includes a GIF image displayer (mono). The C Series, Disk Toolbox V2.03 and some Kick Off goals.

There seems to be more on The Ledgers Vol.8 than on Maggie 7.0. There are many articles of interest, although some of the jokes are terrible! This disk mag is again heavily influenced by demos but it's certainly worth a read.

GAMES 'R' US

Of course, Budgie were best known for their high quality games. Next time in ST PD Roundup I'll take a look at some truly great titles. Budgie all the way!

ROUNDUP RATINGS

ST1008 PRO BINGO CALLER	*78%*
ST507 FUN TIME	*86%*
SPECIAL MAGGIE 7.0	*59%*
ST641 THE LEDGERS VOL.8	*64%*

contact ... contact ... contact ...

FOR SALE

XE SYSTEM: Atari 130XE, Atari 800, 2 x 1050 disk drives, 1010 cassette, De Re Atari, Programmers Reference, manuals, various software, books, magazines, diskettes and disk boxes. £100 o.v.n.o. (no splits). Telephone 0903 205680

XL SYSTEM: 800XL, 1010, 10 games on tape, light-gun (no ROM), 3 ROMs, joystick, all unboxed but with all manuals and cables except XL to Scart £50; 800XL, 1050 (with write-protect switch), 30 games on disk, touch tablet (with ROM), all manuals and cables except XL to Scart. £100. P&P inclusive. Write to Christian 'Red' Delelis, 321 Rue Leon Blum, 62232 Annezin, France

GAMES: ROMs: Flight Simulator 2 (with French manual), £20; Gato (and manual), £15; One-on-One (complete), £5; Peanut (for young), £5. TAPES: Ollie's Follies, Shamus, Vegas Jackpot, Spellbound, £1 each; Chimera, Road Race, £ 2 each; Zorro, Spy Hunter, Up 'n' Down and Tapper, £3 each. Write to Christian 'Red' Delelis, 321 Rue Leon Blum, 62232 Annezin, France

HARDWARE: 1020 (no box, needs new pens), £30; 1010 (as new in box), £15; bad light-gun for spare, £5. Write to Christian 'Red' Delelis, 321 Rue Leon Blum, 62232 Annezin, France

DISKS AND BOX: Tandy 50 disk lockable 5¼" disk file in original sealed wrapping, £5; 30 Tandy Universal certified diskettes, new and original wrapping, £5.50 inc. postage. Stan Shearing, 17 Fairfield Road, Southall, Middx UB1 2DQ. Tel. 0181 574 4674

HARDWARE/SOFTWARE: 65XE with XC12, powerpack, 1 Atari joystick and lead to TV, £36 inc. p&p; 256k 800XL, great working order, hardly used, £55 inc. p&p; Small 2600 console (TV lead only), £6 inc. p&p; SPECIAL - Barnyard Blast + Atari lightgun (GWO), £12 inc. p&p; SOFTWARE LIST (many titles on cassette/disk/ROM). Tel. Brighton (01273 883630

XL SYSTEM: 800XL, 1050 drive both boxed, brand new, £75; 1029 printer good condition, £40; several cassette decks, £5; cassette collection approx. 80 mint condition, £40. All plus p&p. Harry, 30 Framfield Road, London, N5 1UU. Tel. 0181 801 2969 evenings

GAMES: 30+ cassette games all originals, £25; 10 disk games, £20 inc. postage. Phone Jason on 0778 426409

ST STUFF: Freekeys for ST, £10 + p&p; Upgrade for ½ meg STE, FREE + 50p p&p; over 100 boxed ST games from £1; over 300 XL/XE disks and tapes from 25p. Will consider any swap. I may have the item you want, send for list. Steve, Flat 3, 10 The Steyne, Bognor. Tel. 0378334580

VARIOUS: 1050 disk drive, £25; 1010 recorder, £5; all PSU leads etc. included. Magazines - Atari User Vols. 1, 2, 3 complete, Vol. 4 Nos 1-7. NAU 38 - 44 inc. 50p a copy plus p&p. PAGE 6 Nos 16, 17, 20, 21, 22, 24 - 37 inc., 50p each plus p&p; 800XL Dust covers, new, £1.75 (only 3); Disks - Zork I and II, boxed, £5 inc. p&p; Books - Compute!'s Second Book of Atari. Vgc, £5; SAMS Programmers Reference Guide for the 400/800, £5; Atari Sound and Graphics, £5; Compute!'s Machine Language For Beginners. Vgc, £5. All books plus £1.30 p&p. Phone Kent 01634 375128

WANTED

SOFTWARE: Lunar Lander (Al), Fathoms 40, Lost Tomb, Maze Encounter, Neverending Story, Tumblebugs (Datasoft), Ricochet, Summer Games 2, Winter Games (Epyx), Romox carts, Squish 'em!, Worm War 1 (Sirius), Ghostly Manor, Jet (Sublogic), Dodge Racer (Synapse). Originals only please. Penpals in Europe and the US also wanted. Please write to B. Mouchmino, 1 Rue Lyautey, 92340 Bourg-La-Reine, France

ADDRESS: Where could I find the kind of scanner to run with a printer? Also does anyone have a Voice Master to sell? If you have it or can help me, good! Write to Christian 'Red' Delelis, 321 Rue Leon Blum, 62232 Annezin, France

BASIC CART: Has anybody a spare Revision C Cartridge for sale? Please telephone Dennis on 01722 744162 or write - 15, St. Martins Close, Barford St. Martin, Salisbury SP3 4AX

GAMES: Winter Olympiad 88, Bop 'n' Wrestle, Beach Head II, Quest For Maltese Falcon. Also any PAGE 6 Issues 1 to 15 only. Phone Jason on 0778 426409

MAC 65/ASSEMBLER: Wanted MAC 65 cartridge or Atari Assembler cartridge. Your price paid, my old one kaput. Also manual if I am lucky. M. Tomlin, 26 Malyons, Felmores, Basildon, Essex SS13 1PJ. Tel. 0268 554991

GAMES WANTED: For the XL/XE - The Eidolon, Autoduel; For the ST - The Pawn, Guild of Thieves. Will swap or even give you money! Steve, Flat 3, 10 The Steyne, Bognor. Tel. 0378334580

SOFTWARE: Wanted for the XL - Page Designer, Rubber Stamp, Typesetter (my copy has been damaged), Superscript, Victagraph Plot Window, Print Shop, The News Room, Paint-board, The Home Accountant, Book Keeper Kit, touch tablet, trakball, light-pen, R-Time, Sparta-Dos X or any other add on. Please write to K. Smith, 80 Blythe Street, Wombell, Barnsley, S. Yorks S73 8JF

PEN PALS

COMING BACK! After a VERY long delay I would now like to re-establish contact with my much valued Atari 8-bit friends out there. Let me know where you are so I may contact you. John Stecyk, 2 Wugga Court, Ashwood, Victoria 3147, Australia

CONTACTS: Atari Classic programmer with his own programs for distribution seeks contact with other Atari 8-bit users. for details, please write to Mr. John Foskett, 26 Auckland Road, Kingston-upon-Thames, Surrey, K1 3BG (England)

CONTACTS: Contact wanted with any 8-bit user around the world to swap hints, tips, anything Atari 8-bit. Please write to M. Tomlin, 26 Malyons, Felmores, Basildon, Essex SS13 1PJ. Tel. 0268 554991

PEN PALS: To keep in touch with other users to exchange ideas, programming etc. I have an interest in programming, interfacing my own extras, Art packages, DTP. Please write to K. Smith, 80 Blythe Street, Wombell, Barnsley, S. Yorks S73 8JF

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